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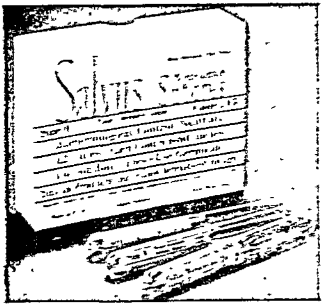

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The Journal of the
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Iodine in Thyrotoxic Surgery

ANDRÉ CROTTI, M.D., F.A.C.S., F.I.C.S.
COLUMBUS, OHIO

THE advent of iodine in thyrotoxic surgery has been a great boon to the surgeon as well as to the patient.

The systematic use of iodine in thyrotoxicosis is comparatively recent. It is true that in 1860 Trousseau[1] observed that a patient who had been suffering from thyrotoxicosis was markedly improved by the use of iodine, accidentally administered by a nurse. Upon discovering the mistake, Trousseau withdrew the iodine medication and the patient became worse. However, the meaning of the observation escaped Trousseau entirely.

Kocher[2] in 1904 advocated the treatment of thyrotoxicosis with iodine; but later, upon observing the ill effects produced by iodine medication, withdrew his support of this form of medication. Undoubtedly, the ill effects were due to a too large dosage.

In 1911 Ohleman,[3] who was suffering from thyrotoxic goiter, treated not only himself but also his thyrotoxic patients with iodine and observed highly beneficial effects.

In 1914 Waller[4] published a paper entitled, "On the Value of Iodine Taken Internally in Graves' Disease." In this paper he highly recommended the use of iodine in thyrotoxicosis, claiming that iodine medication was highly beneficial to the thyrotoxic patient. Not only the cardiovascular and gastrointestinal symptoms subsided, but the general condition of the patient improved immensely: the nervous phenomena gradually diminished, the patient gained in weight, the thyroid lost its vascular signs and became firmer. He observed also that the untimely cessation of iodine treatment allowed the symptoms to return. In short, Waller anticipated in every detail, apart from the estimation of the basal metabolism rate, the work of Plummer. However, his work passed unnoticed.

It was Plummer[5] who, in 1923, not only confirmed the observations made by various authors on the beneficial effects of iodine medication, but also popularized this form of treatment.

RESULTS OF IODINE TREATMENT

We have used iodine treatment in about 8,000 cases of thyrotoxic goiter, primary as well as secondary. In the *primary* thyrotoxic diffuse parenchymatous goiter we find the same results as observed by all who have used this medication: the basal metabolic rate falls rapidly within ten to fifteen days; the cardiac rate diminishes accordingly; the thyroid shrinks in size and loses most of its vascular signs; the arteries become smaller and less tortuous; and the bruit over the gland diminishes or disappears altogether. At the same time the gland assumes a firmer consistency and the general behavior of the patient improves remarkably.

In *secondary* thyrotoxic nodular goiter the results are not as striking as in the primary form of thyrotoxicosis; nevertheless, we have observed that iodine treatment is beneficial. The basal metabolism falls, although not as readily as in the primary form; the changes in the goiter are not as obvious as in the diffuse parenchymatous type, except the vascular signs, which, when present, may subside or disappear altogether. The heart is perhaps the organ which shows the greatest improvement. Here also the general improvement of the patient becomes very noticeable.

The effects of iodine are by no means constant. Furthermore, a dosage which may prove effectual in one individual may be entirely ineffectual in another. It may be truly said that an optimum amount has to be found for each patient. It is not at all uncommon to observe that some patients do not respond to iodine medication simply because the dosage has been too small. However, as a general rule, it is better to start with small doses and increase gradually until the optimum dosage is found.

There does not seem to be complete agreement among medical men as to what constitutes small doses of iodine. It is estimated that a daily absorption of about 6 mg. is the *physiological* amount of iodine necessary to induce and maintain the maximum colloid storage in a normal thyroid gland; smaller doses do not induce this maximum colloid storage. Therefore, 6 mg. of iodine daily might be regarded as the physiological dosage to be used in the treatment of thyrotoxic goiter.

Clinical observations, however, show that this physiological dosage is entirely inadequate. Indeed, in our routine practice we regard 10 to 20 minims of Lugol's solution daily as a small dose. Yet, if we remember that 10 minims of Lugol's represents 78 mg. of iodine, it becomes apparent at once that there is a great discrepancy between the *physiological* and a small *therapeutic* dose. Even this therapeutic dose is very frequently inadequate, and larger doses must be resorted to.

WORKING MECHANISM OF IODINE

The working mechanism of iodine in thyrotoxicosis has been very baffling, and to a great extent still is. It is difficult to understand how iodine can bring about such striking improvement, and why, after a few weeks of medication, the thyrotoxic syndrome frequently returns to its previous level, or worse. Also, one wonders why iodine should induce such a specific response in thyrotoxicosis, when the same response is absent if iodine is given to normal individuals. This iodine response in thyrotoxicosis is all the more remarkable in that iodine does not produce the same response in experimental hyperthyroidism induced by thyroid extract. This was shown to be true in man, as well as in animals, by Carson[6] in 1928.

In trying to understand the iodine mechanism in connection with thyrotoxicosis, we must bear in mind several factors:

1. Iodine increases the colloid content of the alveoli; the colloid assumes a thick aspect and shows a tendency to distend the alveoli; the alveolar cells become more flattened and elongated; the same is true for their nuclei.

2. In the primary diffuse parenchymatous thyrotoxic goiter the iodine-containing colloid is largely absent; it is thrown into the system as soon as it is manufactured. In consequence, the iodine content of the gland is considerably reduced, while on the other hand the blood iodine is markedly increased. The iodine present in the gland is largely made up of ionized inorganic iodine, while the blood iodine is largely made up of organic iodine. Saegesser[7] in 1932 showed that ionized inorganic iodine appears to be a thyro-stimulant; thus it might be argued that this substance activates the thyroid to overfunction.

3. It stands to reason that since the thyrotoxic gland is iodine-poor, iodine medication will result in a considerable increase in the iodine content of that gland; thus the relationship of the various fractions of thyroid iodine will again assume their normal aspects: the function of the thyroid is rendered more physiological, the colloid is retained within the alveoli, the thyroid overfunction is reduced or even ceases; in short, the gland returns to what is known as the *colloid-resting stage*. This results in the diminution of all the toxic symptoms due to the overfunction of the thyroid, and consequently results in a very great improvement of the patient. The gland loses its vascular signs; soft, elastic, even almost pulsating as it was before, it now becomes firmer because of the storage of colloid in the alveoli.

In thyrotoxic thyroids which have responded fully to iodine medication, one finds at operation that the gland is very firm; it bleeds very little on cutting, and the cut surface presents a very fine, granular, glistening appearance, suggestive of colloid-distended alveoli. On microscopic examination this particular goiter offers a picture of complete involution; the alveoli are distended to capacity by the colloid, the cells are of the low cuboidal type, the blood supply is diminished; in short, we have the picture of a gland in the colloid-resting stage. That the gland has been previously in a state of hyperfunction is evidenced here and there by remnants of an unduly active cellular hyperplasia.

On the other hand, if the iodine response has been only partial, or even negative, the thyroid still retains its vascular signs. Microscopically, it exhibits all the characteristics of an overfunctioning gland, such as absence of colloid in the alveoli, hyperplastic alveolar cells, etc.

The reason why iodine therapy is much less effectual in the secondary thyrotoxic nodular goiter than in the primary diffuse parenchymatous one is because the actual thyrotoxic cellular hyperplasia is much reduced in the former type. Iodine seems to have little or no influence on the large existing colloid nodules; they retain their normal thick colloid content, in marked contrast with the alveoli of the diffuse parenchymatous goiter, which are ordinarily empty of colloid. However, interspersed between the colloid nodules there are numerous hyperplastic cellular foci; these are the ones which respond to iodine medication. This fact will explain why the nodular colloid goiter responds [illegible] readily to iodine medication [illegible] chymatous goiter.

How are we to explain the very puzzling condition which we see so frequently; that is, not only the return of all the symptoms, but even their exaggeration, in the face of continued iodine medication?

The only logical answer is that iodine, after accomplishing its physiologic phase, namely, after inducing the colloid-resting state, is no longer wanted except in physiologic doses of maintenance. If an increased supply of iodine is kept up, it becomes an irritant and produces a toxic thyroiditis, with all the signs of functional overactivity. Thus, the thick colloid, which was originally in a state of colloid-gel, becomes liquefied and converted into colloid-sol; hence, its re-absorption into the system; hence, the return of all the toxic phenomena.

IODINE-RESISTANT CASES

A certain number of thyrotoxic patients do not respond to iodine medication. They are iodine-resistant. The mechanism of this iodine refractoriness is not yet clearly understood. Perhaps the refractoriness is due to the formation of substances which neutralize the iodine used in the same way as endocrine refractoriness is regarded as being due to antihormones. This condition is supposed to be brought about by a balancing, self-regulating mechanism which counteracts the effects of the substances used for medication.

Iodine refractoriness is ordinarily observed in individuals who have been Lugolized over a long period of time. It is probable that iodized salt used for preventive purposes can also induce iodine refractoriness. However, some patients who have never used iodine seem to be iodine-resistant from the start. The reason for this iodine refractoriness is not clearly understood.

The incidence of iodine refractoriness, in our experience, is about 9 per cent of the thyrotoxic cases.

Iodine resistance is a very great handicap in handling thyrotoxic patients, since we are consequently deprived of one of the best means we have for controlling the severity of thyrotoxicosis.

When confronted with these cases, we resort to heavy doses of iodine. If this does not succeed, we then ask the patient to undergo a series of roentgen-ray treatments before thyroidectomy is undertaken.

THYROTOXIC CRISIS

Thyrotoxic crisis after thyroidectomy is one of the most alarming and most dreaded of complications. Now that preoperative treatment with Lugol's solution is general, its incidence is much lower than formerly. However, it still occurs despite this preoperative medication.

Generally speaking, we may say that postoperative thyroid crises are only an exaggeration of all the symptoms seen in thyrotoxic patients. Tachycardia is exceedingly high, ranging between 180 and 200 or more beats. Auricular fibrillation is sometimes very marked. The patient shows extreme agitation, he tosses around in bed and his whole body is sometimes shaken by an intense tremor; he wants to get up and go home and must be restrained by attendants. Perspiration is abundant, and although there is no mechanical obstruction of the trachea, he shows air hunger. Temperature is unusually high, 103°-104° F., or more; the highest temperature we have seen in these patients was 107° F. The patient becomes disoriented, has hallucinations, sees imaginary people and talks incessantly. Exophthalmos becomes marked. Diarrhea is frequent and uncontrolled. This condition usually reaches its acute stage at the close of the second day, after which it generally terminates in death. In the lighter forms the mental symptoms are less pronounced, tremor is less intense and recovery usually follows.

To a certain extent one can foresee preoperatively a thyroid crisis. It is most likely to occur in emaciated patients, in patients with gastrointestinal symptoms, such as vomiting or diarrhea, in patients with acidosis, in patients with mental aberrations and in iodine-resistant patients.

Furthermore, certain behavior of the patient when undergoing anesthesia for the thyroidectomy may be taken as a warning of an impending postoperative thyroid crisis. Patients to be suspected are those who, in going under anesthesia, show an unduly high cardiac rate; and who, when fully anesthetized, do not show a decline in the cardiac rate, the latter remaining at a very high level without showing any tendency to decrease. If, at the same time, these patients show jactitation while going under the anesthetic, also cardiac dilatation, they may be considered very poor operative risks and very likely to develop a thyroid crisis. It is therefore wiser to postpone operation and submit them to a more prolonged preparation.

The time consumed in performing the operation is also an important factor in the production of a thyrotoxic crisis. As a rule, the toxic goiter patient stands very poorly any kind of surgical or chemical traumatism (anesthesia). Now it stands to reason that the patient who is submitted to a prolonged thyroidectomy will be more likely to develop a thyroid crisis than the one whose chemical and surgical traumatism has been much shorter.

It has not been our experience that loss of blood is a deciding factor in bringing about a thyroid crisis.

We feel that drainage is an important safety factor in avoiding a thyroid crisis, since it prevents absorption of toxic products into the general circulation. At any rate, be this the case or not, we systematically use open drainage in these patients. By this I mean that the wound is left open, packed with acriflavine, and seepage is allowed to exude freely. Forty-eight hours or more later, the wound is closed. We regard this form of drainage as the best one in such cases.

Since we feel that thyroid crises are purely an exacerbation of all the pre-existing toxic symptoms, we are bound to conclude that the etiology of these thyroid crises is the same as observed in the thyrotoxic syndrome. On the other hand, since we admit that thyrotoxicosis is induced by an oversupply of thyroxin, we are forced to conclude that thyroid crises are also caused by an undue amount of thyroxin in the general circulation.

What causes this sudden appearance of thyroxin? It might be argued that it is forced into the circulation by the manipulations of the toxic gland during operation. Most likely, this factor is only a minor and negligible one.

We know that thyroxin is normally fixed in the tissues and kept there as a reserve for emergency physiologic necessities. Now, during the thyrotoxic syndrome, thyroxin is normally oversecreted; thus we may readily assume that the amount fixed in the tissues becomes considerably increased. This thyroxin fixation is the safety valve against thyroxin intoxication. Now, let the thyroxin fixation mechanism cease to operate; then the thyroxin fixed in the tissues is released into the general circulation, the system becomes flooded with it, and the thyroid crisis appears. What induces the releasing mechanism to operate is still unknown.

THYROTOXIC COMA

In rare instances the postoperative thyrotoxic syndrome assumes an entirely different aspect. After operation the patient does not regain consciousness, but remains comatose for days. One of our patients remained comatose for ten days. Such patients lie in their beds motionless; temperature is high, but never remains at the high level observed in thyroid crisis. The cardiac rate is rapid, but again does not reach the same high level as seen in thyroid crisis. Ordinarily, these patients die without regaining consciousness.

IODINE MEDICATION

It is very important to remember that iodine does not cure thyrotoxic goiter. It only induces a resting stage during which thyroidectomy can be more safely performed. If iodine medication is carried on unduly long, especially in large doses, the resting stage soon gives way to a return of the thyrotoxic symptoms. It is also well to remember that the prolonged use of iodine may induce a refractory state which robs the patient and the surgeon of a factor of safety when needed.

Iodine treatment is indicated in all forms of thyrotoxic goiter, primary as well as secondary, whether incipient, severe or a masked form of hyperthyroidism. The optimum response will be found in the genuinely diffuse parenchymatous goiter; the thyrotoxic secondary nodular colloid goiter also responds, but in a much less spectacular manner. The true masked hyperthyroidism is ordinarily benefited by iodine treatment.

The best medication for the thyrotoxic goiter heart is iodine. We also use digitalis routinely and have never seen any objection to the use of this drug. It is particularly well suited to patients with cardiac dilation, decompensation and auricular fibrillation.

Any thyrotoxic patient undergoing preoperative preparation for thyroidectomy, no matter whether primary or secondary, should receive iodine medication. The treatment depends entirely upon the nature of the goiter and especially upon the response to the iodine medication. It may last only five or six days or it may be necessary to prolong it for two or three weeks. We ordinarily prescribe 20 to 30 minims of Lugol's solution daily in water, milk or fruit juices.

When it is thought that the patient is ready for operation, an ampule of diasporal, which contains 100 mg. of colloidal iodine, is given intravenously the day before operation. The same intravenous diasporal injection is used as soon as the operation is finished and, if necessary, is repeated the following day. It is absolutely essential that the injection of diasporal be made intravenously, because if it is spilled in the surrounding structures, a good deal of painful induration will result.

We also use sodium iodide, 0.5 to 1 Gm., intravenously. Spilling of the sodium iodide in subcutaneous structures has little or no consequence.

When dealing with a thyroid crisis, or with a thyrotoxic coma, we always use a very large dosage of diasporal or sodium iodide. We have given as much as 500 mg. of diasporal in twenty-four hours.

In our experience these very large amounts of iodine given intravenously do not seem to produce any untoward effects. Only once have we observed that after the use of 500 mg. in twenty-four hours an old, dormant pulmonary tuberculosis became reactivated.

To sum up—in ordinary conditions 10 to 30 minims of Lugol's solution daily will be sufficient to prepare a patient for thyroidectomy. In other conditions much larger doses will be necessary. We must remember that 10 minims of Lugol's solution represents 78 mg. of iodine. Lugol's solution per rectum is much less satisfactory.

The treatment of iodine-resistant patients presents a further problem, since this iodine refractoriness robs both the patient and the surgeon of one of the most helpful means of controlling the hyperthyroid condition. In such cases we have resorted to very heavy doses of iodine and have combined iodine medication with roentgen-ray treatment. A few roentgen-ray applications will improve the patient considerably and enable the surgeon to perform the operation with comparative safety.

Iodine is not only a useful medication in handling thyrotoxicosis, but is also a very valuable diagnostic adjunct; in doubtful cases iodine will act as a therapeutic test to determine if thyrotoxicosis is present or not. The patient's response in these cases will provide valuable information, especially if, after withdrawal of the iodine medication, the patient returns to his previous state.

SUMMARY

The results of iodine treatment in about 8,000 cases of thyrotoxic goiter, primary as well as secondary, are discussed. Primary thyrotoxic diffuse parenchymatous goiter responds best to iodine medication; secondary thyrotoxic nodular goiter also responds, but less strikingly. The physiological dose (6 mg. of iodine daily) necessary for the maintenance of the function of the thyroid is totally insufficient as a therapeutic dose. We must remember that a small dose (10 minims) of Lugol's solution represents 78 mg. of iodine.

The working mechanism of iodine in thyrotoxicosis consists in inducing a colloid-resting stage. Iodine is less effectual in the nodular type of goiter because these colloid nodules do not respond to iodine medication, the only portion which does respond being the thyrotoxic cellular hyperplasia interspersed among the nodules. Prolonged medication is liable to produce a toxic thyroiditis with the return of thyrotoxic symptoms. Nine per cent of the author's thyrotoxic cases were iodine-resistant.

Postoperative thyroid crises are less frequent since the advent of iodine treatment. These crises are an exacerbation of the preexisting thyrotoxic symptoms and seem to be caused by the sudden release of the fixed thyroxin in the tissues, thus flooding the organism with an undue amount of thyroxin. Postoperative drainage is a safety factor in avoiding thyroid crises.

In using iodine, it is best to start with small doses and increase gradually until the optimum amount is found. Diasporal colloidal iodine (100 mg.) or sodium iodide (1 Gm.) is given intravenously the day before and again the day of the operation. In thyroid crisis, as in thyrotoxic coma, a very large amount of iodine is given intravenously. Iodine-resistant patients are given large doses of iodine and are also treated with roentgen-rays preoperatively, if they are of the thyrotoxic type.

REFERENCES

1 Trousseau, A: Gaz. d hôp. d Paris, vol 33, 1860, Goitre exophthalmique clinique de l'hotel Dieu, 1877, Clinique medicale de l'hotel Dieu, 1898.
2 Kocher, Theodore: Deutsche klin Wchnschr, vol. 8, 1904; vol. 91, 1907; Arch. f klin Chir, vol. 79, 1906
3. Ohlemann: Berlin klin Wchnschr, vol 48, 1911
4 Waller, H.: The Prescriber, vol 8, 1914
5 Plummer, H. S: Tr Am. Assn Physicians, vol 63, 1923; Coll Papers, Mayo Clinic, 1923, 1925
6 Carson, D. A: Am J M. Sc (Nov), 1928
7. Saegesser: Swiss Goiter Commission, Berne, 1932.
8. Crotti: Thyroid and Thymus

RÉSUMÉ

Le iode dans la chirurgie thyreotoxique

Les résultats du traitement avec le iode dans presque 8,000 cas de goitre thyreotoxique primaire et secondaire sont discutés. Le goitre primaire thyreotoxique diffus parenchimateux réponds le mieux à la médication avec le iode; le goitre secondaire thyreotoxique nodulaire réponds aussi, mais moins remarquablement. Le dosage physiologique (6 mg. de iode par jour) necessaire pour le maintenement de la function de la thyroide est totalement insuffisant pour un dosage thérapeutique.

Le mechanism d'action du iode dans la thyreotoxicose consiste en déterminer un état de repos du colloïde. Le iode est moins efficace dans le type nodulaire du goitre parceque ces nodules colloides ne répondent pas à la médication avec le iode, la seule partie que réponds est la hyperplasie thy-

reotoxique cellulaire entremèlée parmi les nodules. Une prolongée médication peut produire une thyroïdite toxique avec le return des symptòms toxiques. Neuf pour cent des cas de l'auteur étaient iodo-résistants.

Les crises thyroïdiennes postopératives sont moins frequentes après la venue du traitement avec le iode. Ces crises sont une exacerbation des pre-existentes symptòmes thyreotoxiques et semblent ètre dues à la sudaine liberation de la thyroxine fixée dans les tissues, ainsi inondant l'organisme avec une anormale quantité de thyroxine. Le drainage postopératif est un facteur dans l'éviter les crises thyroïdiennes.

En employant le iode c'est mieux de commencer avec des petites doses et augmenter gradualement jusqu'a que l'optimum est trouvé. Diasporal iode colloidal (100 mg.) ou iodure de sodium (1 Gm.) sont donnés dans les veins le jour avant et encore le jour de l'operation. Dans les crises thyroïdiennes, comme dans le coma thyroïdien, une grande quantité de iode est donnée dans les veins. Les malades iodo-résistents reçoivent grandes quantités de iode et sont aussi traités avec les rayons roentgen, s'ils sont du type thyreotoxique.

ZUSAMMENFASSUNG

Jod bei thyreotoxischer Chirurgie

Es werden die Resultate von Jodbehandlung in ungefähr 8,000 Fällen von thyreotoxischen Kropf, primär sowohl als auch sekundär, besprochen. Primärer, thyreotoxischer, diffuser, parenchymatöser Kropf spricht am besten auf Jod Medikation an; sekundärer, thyreotoxischer nodulärer Kropf reagiert auch, aber weniger auffallend. Die physiologische Dose (6 mg Jod täglich) welche für die Erhaltung der Schilddrüsenfunktion nötig ist, ist als therapeutische Dosis völlig unzulänglich.

Der Arbeitsmechanismus des Jod in Thyreotoxicosis besteht in der Induzierung eines Kolloid resistenten Zustandes. Jod ist weniger wirksam bei dem knotigen Kropftypus, da diese Kolloidknoten nicht auf Jodmedikation ansprechen und die einzigen Portionen die reagieren, die zwischen die Knoten eingesprengte, thyreotoxische zelluläre Hyperplasie ist. Verlängerte Medikation kann eine toxische Thyreoiditis hervorrufen, mit Rückkehr von thyreotoxischen Symptomen. Neun per cent der thyreotoxischen Fälle des Autor waren Jod resistent.

Postoperative Thyreoid Krisen sind seit der Einführung der Jod Behandlung weniger häufig. Diese Krisen sind eine Verschlimmerung der pre-existierenden thyreotoxischen Symptome, scheinbar verursacht durch das plötzliche Freiwerden des gebundenen Thyroxin in den Geweben, welches dadurch den Organismus mit einer ungebührlichen Menge von Thyroxin überschwemmt. Postoperative drainage bietet einen Faktor zur Vermeidung von Thyreoidkrisen.

Bei der Anwendung von Jod ist es am besten mit kleinen Dosen zu beginnen und langsam anzusteigen bis die optimale Menge gefunden wird. Diasporales kolloidales Jod (100 mg) oder Jod Natrium (1 Gm) wird einen Tag vor und einen Tag nach der Operation intravenös verabreicht. Bei Thyreoidkrisen als auch bei thyreotoxischen Koma wird eine grosse Menge Jod intravenös gegeben. Jod resisten Patienten werden grosse Dosen von Jod verabreicht und werden auch preoperativ mit Röntgen Strahlen behandelt, wenn sie dem thyreotoxischen Typus angehören.

SUMARIO

El yodo en la cirugia del tiroides tóxico

Son discutidos el resultado de 8,000 casos de bocio tóxico primario así como el secundario. El bocio parenquimatoso difuso primariamente tóxico responde mejor a la medicación con yodo; el bocio nodular secundariamente tóxico responde tambien, pero menos notablemente.

Una dósis terapeútica de yodo es insuficiente para mantener la función del tiroides. La dósis fisiológica es de 6 mg. de yodo diariamente.

El mecanismo del yodo en las tirotoxicosis consiste en inducir a un estado de reposo coloidal. El yodo es menos efectivo en el tipo nodular porque los coloides no responden al yodo, la única porción que responde es la hiperplasia celular intersticial que se encuentra entre los nódulos. La medicación prolongada es capaz de producir una tiroiditis tóxica con el regreso a los síntomas tirotóxicos. Nueve por ciento de los casos reportados por el autor fueron yodo-resistantes.

Las crisis tiroideas post-operatorias son menos frecuentes desde el advenimiento del tratamiento con yodo. Estas crisis son una exacerbación de los síntomas tóxicos preexistentes y parecen ser causadas por la repentina libertad de la tiroxina fijada en los tejidos, inundando el organismo con una excesiva cantidad de tiroxina.

En el uso del yodo, es mejor empezar con pequeñas dosis y aumentar gradualmente hasta la cantidad optima encontrada. El yodo coloidal, Diasporal (100 mg.) o yoduro de sodio (1 gm.) es administrado intravenosamente un día antes y un día despues de la operación. En las crisis del tiroides, como en el coma tirotóxico, se dará una gran cantidad de yodo intravenoso. Los pacientes yodo-resistentes se les dará grandes dosis de yodo intravenoso y si son del tipo tirotóxico serán tambien tratados con rayos roentgen antes de la operación.

RIASSUNTO

Lo iodio nella chirurgia tireotossica

Sono discussi i risultati del trattamento con iodio in circa 8000 casi di gozzo tireotossico, sia primario che secondario. Il gozzo diffuso parenchimatoso primario tireotossico risponde nel miglior modo al trattamento iodico; il gozzo tireotossico secondario nodulare risponde anche, ma meno nettamente. La dose fisiologica (6 mg. di iodio al giorno) necessaria per il mantenimento della funzione della tiroide è del tutto insufficente come dose terapeutica.

Il meccanismo di azione dello iodio nella tireotossicosi consiste nell'indurre uno stato di riposo della sostanza colloide. Lo iodio è meno efficace nel tipo nodulare di gozzo perchè questi noduli colloidi non rispondono alla medicazione iodica, la sola parte che risponde è l'iperplasia tireotossica cellulare dispersa tra i noduli. Medicazione prolungata può produrre una tiroidite tossica col ritorno dei sintomi tireotossici. Nove per cento dei casi di tireotossicosi dell'A. erano iodo-resistenti.

Crisi tiroidee postoperative sono meno frequenti dall'avvento del trattamento iodico. Queste crisi sono un' esacerbazione dei sintomi tireotossici preesistenti e sembrano essere causate dall'improvvisa liberazione della tirosina fissata nei tessuti, inondando così l'organismo con un abnorme quantità di tirosina. Drenaggio postoperativo è un fattore nell'evitare crisi tiroidee.

Nell'usare iodio, è meglio cominciare con piccole dosi e aumentare gradatamente fino a che l'ottima quantità sia trovato. Iodio colloidale (100 mg.) o ioduro di sodio (1 gm.) sono dati il giorno precedente e ancora il giorno della operazione. Nelle crisi tiroidee come nel coma tireotossico una grande quantità di iodio è data per via endovenosa. Pazienti iodio-resistenti ricevono forti dosi di iodio e sono anche trattati con raggi rontgen prima della operazione, se sono del tipo tireotossico.

Cardiotoxic Goiter

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BY a cardiotoxic goiter is meant one that causes a disturbance of the heart due to a toxic substance released by degenerative changes in the goiter. When are we warranted in speaking of degeneration? When microscopic examination reveals a state in which the colloid has definitely departed from the normal and the cells are functionless because they are literally gone.

Is there degeneration of the colloid in all cardiotoxic goiters? That is the rub—there is not always. Judging from the clinical signs, one sometimes believes that he will find colloid changes but finds only cellular hyperplasia or cell degeneration. Whether the changes in the cells are the actual cause of death and the basal colloid only an inconstant evidence of it, whether the degenerated colloid, merely an inert substance, is only an incidental finding of postmortem significance, is a question that cannot be answered positively in the light of our meager findings.

Fortunately, it is now possible to study the effect of the goiter on the heart by a total thyroidectomy in all stages of the disease, in this way determining the effect the goiter has had on the heart and at the same time securing material for histologic study. The obvious conclusion is that the goiter was responsible for the cardiac condition if the heart becomes normal after the ablation of the thyroid gland. By the laboratory study of the tissue thus removed and by finding a constant change, the demands of scientific investigations are fulfilled, at least for clinical purposes.

It is strange that while we have been busy studying the problem of goiter deaths, our problem has somehow slid out from under us. My old goiter patients without exception died from heart failure. I know exactly how they die, from long, weary bedside observation. I know, too, how it feels to have a patient die of heart failure after operating on him. These patients died only because the seriousness of their condition was long unrecognized. Now patients come before they are dangerously sick, the goiter is totally ablated and this ends the matter. Cardiac deaths are now a rarity.

PATHOGENESIS

It is obvious that we must go back much farther than has been our wont in studying the effect of goiter on the heart. Old bosselated goiters, supposedly innocent throughout life, are actually constantly at work. The so-called nontoxic nodular goiters frequently pass directly to a cardiotoxic state without there having been compelling evidence of thyroid toxicity, in the ordinary sense, at any period of the disease. Let it be repeated that absence of thyrotoxic manifestations is no proof that the heart is not being injured by the goiter. A slight increase in pulse rate and some nervousness are unlikely to cause great concern in the mind of either patient or doctor until a failing heart compels recognition of the baneful effect of the goiter. It must be obvious to everyone that the basal rate is useless in determining the toxicity of these cases.

Such cases require the combined knowledge of the clinic, the operating room and the laboratory, and even the postoperative life history of the patient for even an approximately complete picture. The pathologist working alone cannot hope to solve the problem. An extended laboratory study in association with the surgeon may be necessary to bring some semblance of order out of chaos. The presence of the surgeon is needed to remind the pathologist that the study of a single block of tissue may be misleading, and dependence on a simple routine stain even more so. Certain it is that one must study each case as an entity, comparing the various anatomic changes with the clinical signs. Nowhere in the field of surgery is the cooperation of the pathologist so important, for only by associating himself with the surgeon is it possible for either to see the whole picture. We might even admit the physiologists and the physical chemists, if they would cease to soar in the celestial field and come down to earth to engage in the vulgar pursuit of listening to the wails of the unclean. Everyone should realize that the mere fact that we do not recognize or understand a pathologic state is not to be used as evidence that it does not exist.

PATHOLOGY

The essential changes in cardiotoxic goiters are distinguished from those in toxic nodular goiters in that in the former there are degenerative changes which in some way damage the general constitution, including the heart, while in the latter there is increase in cell activity. When such goiters are viewed in the laboratory, the differences between the hyperplastic and the degenerative states are difficult to distinguish in the gross. The clinical examination is more enlightening. The difficulty lies in the fact that the two processes are commonly active at the same time. One sees early cell activity in more or less pure form, but at a varying age degenerative changes begin, and in most cases the two processes are active at the same time.

This difficulty is what keeps us running from the laboratory to the clinic for the answer to more and more questions. We must recognize that the slide we are examining gives a picture of only the one area. What other parts of the gland may show can be determined only by the examination of more tissue. By thorough study we frequently find that one part of the gland shows hyperplasia, representing, say, the toxic nodular goiter, while in another area of the same gland there is no hyperplasia, only degeneration. In such cases which part is damaging the patient?

The first impressive pathologic changes that confront the surgeon are the friability of old colloid goiters when they are exposed at operation. The capsule tears easily, and with it the veins, producing distressing hemorrhage, as inexperienced operators may find out to their consternation. The parenchyma oozes out like brain tissue; it is usually reddish brown in color and of the consistency of exuberant granulation tissue. This state of the fibrous tissue is due to degeneration, depending on the acuteness of the glandular reaction. However, these physical changes may be encountered in equal degree in toxic nodular goiters, or even in the nontoxic, without notable cardiac change.

The small, late-appearing, though long-existing goiters are different. The connective tissue is firm, the gland is inelastic and the vascularity is slight. This is likely to be true in cases in which the existence of a goiter was not recognized until search was made for a possible explanation of a cardiac failure. The thyroid is firm, sometimes so hard as to simulate cancer, and may even be indistinguishable from it on the operating table until one remembers that cancer seldom involves both lobes. These thyroids may be but little if any enlarged, in which case the term "cardiotoxic thyroid" is more exact, anatomically speaking, than "cardiotoxic goiter."

My hypothesis at [illegible] ne is [illegible]

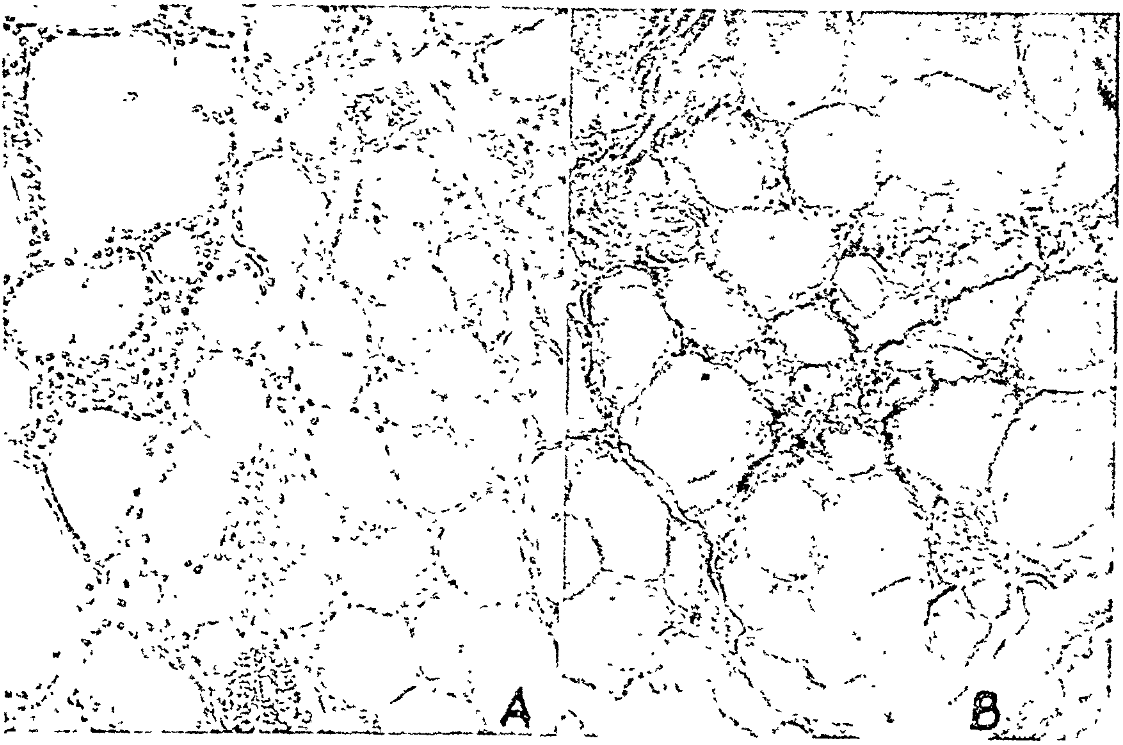

Fig. 1. Burned-out acute Basedow's disease followed by acute thyrotoxicosis. *A.* Colloid, in part basophilic, some very palely staining, some granular. The epithelium is degenerated and in some acini absent. *B.* Area of cellular hyperplasia indicative of acute thyrotoxicosis.

the primary factor is to be found in the changes in the colloid. This theory certainly is logical in those cases in which there is complete absence of cellular degeneration, changes in the tinctorial reaction alone being demonstrable. The change from an acidophilic to a basophilic colloid is too constant to be mere chance. I believe that this hypothesis, which has absorbed my attention for so many years, has risen to the dignity of a theory and I offer it as such.

If physiologists will realize that we know nothing about the action of the thyroid in the adult, we can start with the theory that the goiter does not amount to much after we are grown up. We now know that we can completely remove the thyroid gland in adults and nothing deleterious will happen. It seems that the time has arrived for the physiologists to count their money.

The essential change in cardiotoxic goiter is the regression of the acinal colloid from an acidophilic to a basophilic structure. With the changes in the colloid there are many other changes. Degenerated acinal epithelium commingled with newly formed acini may be present, reminding one of an aged person who robs a cradle obsessed with the delusion that he is as good as he ever was. Can the thyroid in aged persons, by forming new acini, revert to an infantile state comparable to the juvenile gland while it is getting us sexed in the first place? This is of interest to surgeons, because if true, it would be an indication for total prophylactic thyroidectomy in all males, say at an arbitrary age of thirty-five years. This is not an attempt to be facetious. Perhaps the old man having his second fling has just gone juvenilely thyroid, which, please note, is remediable by total thyroidectomy.

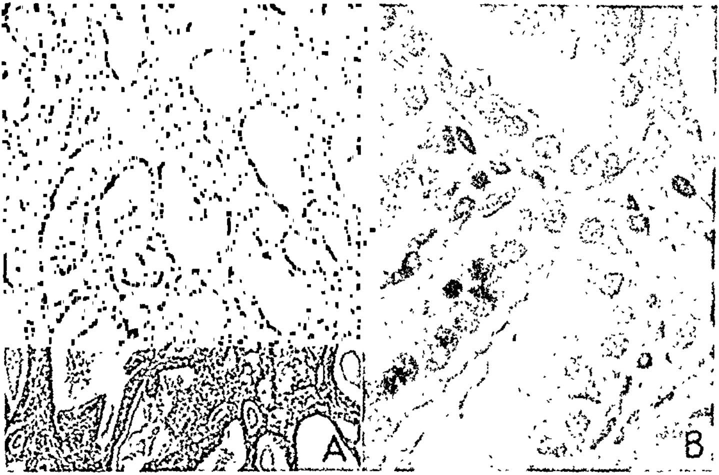

Fig. 2. Colloid degeneration in cardiotoxic goiter. *A.* The colloid is slightly basophilic, as seen in the hematoxylineosin stain *B.* Same specimen stained with Mallory's aniline blue stain.

At any rate, the colloid in these old goiters does change its reaction even if there appears to be, here and there, evidence of renewed cellular activity. I have worked with eleven different dyes. The basophilia shown by hematoxylin is relatively a late reaction. Many of the more complicated dyes show the reaction much earlier. Mallory's aniline blue dye is simple to use and just as delicate as the more complicated stains, therefore it has been made the standard laboratory routine here.

The change from acidophile to basophile colloid, as just discussed, is a very constant finding, though often associated with one or more of the following changes:

1. Degeneration in the acini in which all colloid is lost, the cells being formed in groups lying in poorly formed connective tissue. These sometimes resemble epithelial malignancies and are often so diagnosed.

2. Desquamation of epithelium into the contained colloid.

3. Hyperplasia of epithelium, usually formed in groups lying in the interacinar spaces or free if the acini have disappeared. In the severer cases the whole structure is lost. The acinal epithelium is flat and for the most part desquamated; the colloid is absent or stains imperfectly if at all.

Sometimes the old slumbering goiters may suddenly show distinct evidence of thyroid intoxication, a really Basedowified goiter of Kocher. Areas show some change in colloid reaction with low degenerated cells (Fig. 1A). Other areas show the development of new acini whose cells show real capacity for secretion (Fig. 1B). The patient from whom the slides in Figure 1 were obtained began with a very acute case of Basedow's, accompanied by fever and delirium. After a few years the symptoms

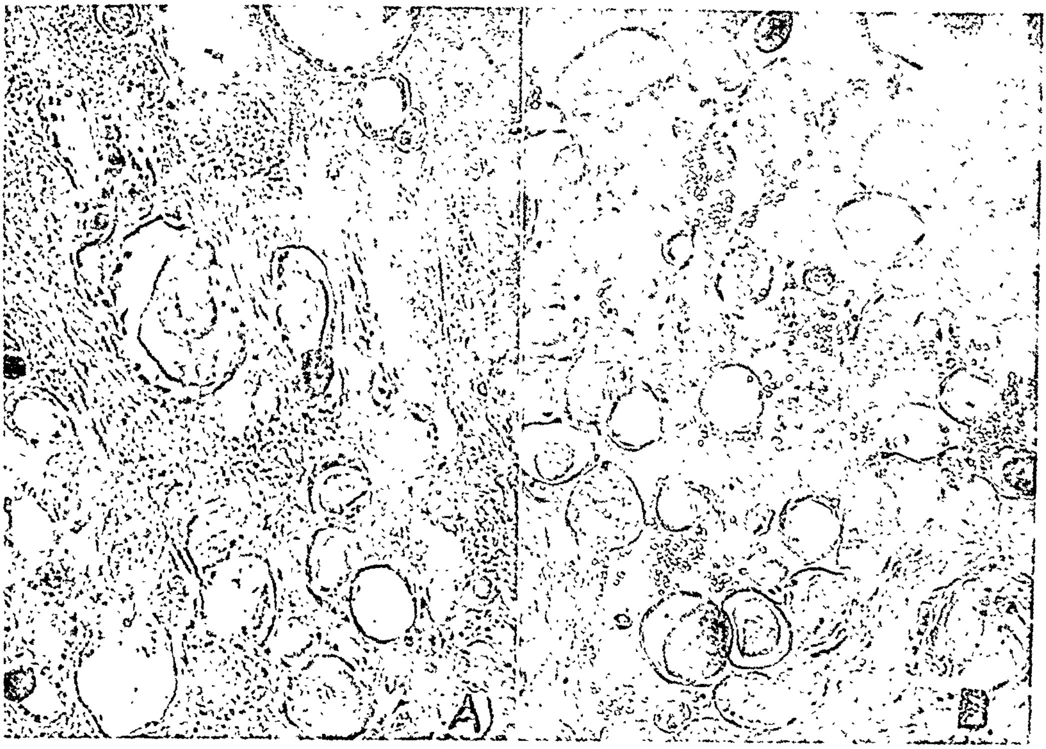

Fig. 3. Slide from a cardiotoxic goiter with extensive degeneration. *A.* Increase of fibrous tissue, some very palely staining acini, the epithelium low, degenerated, even absent. *B.* All tissues palely staining, a few deeply staining acini.

lessened and she enjoyed fair health for almost thirty years. Then she began to show cardiac signs and, suddenly, pronounced acute toxicosis.

This patient presented a picture commonly seen in old Basedow's disease: subsidence after some years, the patient seeming in large measure cured; then suddenly a flare-up, though without the return or augmentation of the eye signs. So commonly have I seen this occur that I have come to regard it as the normal end of old Basedow patients. How much is due to changed colloid, how much to cell hyperplasia is impossible to say. This much I have learned: when an old case of Basedow's disease flares up, the patient dies in a short time, either with or without operation.

In the typical cardiotoxic goiter there is no cellular hyperplasia. All is degeneration. The early stage shows a flat, obviously inactive acinal epithelium (Fig. 2A) with the colloid staining slightly basophilic. The change in the colloid is much more impressive when stained with special stains (Fig. 2B).

In more advanced stages the fibrous tissue is notable (Fig. 3). The acini may seem to be empty except in some areas, where it is intensely staining.

In yet more pronounced cases the structure is almost formless. There is little to suggest a possible functioning tissue. All that remains of recognizable thyroid tissue is small acini lined by epithelium very atrophic or even absent (Fig. 4A). In other areas the acinal epithelium is separated and may lie free of structure, which to the inexperienced sometimes suggests malignancy (Fig. 4B).

Occasionally one finds slides which are confusing. These may show a complete

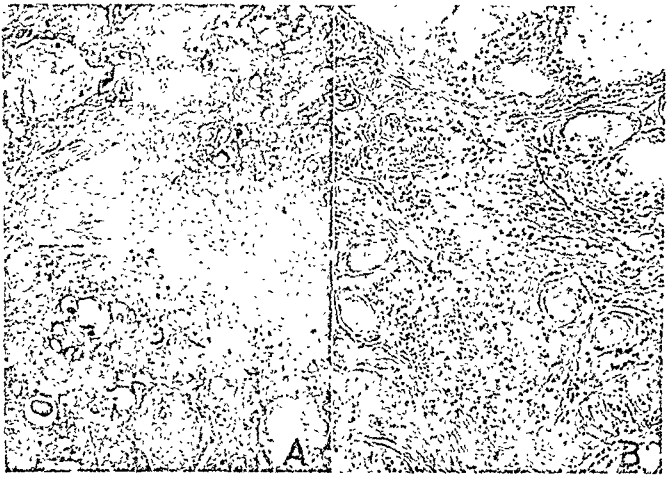

Fig. 4 Advanced cardiotoxic goiter. *A.* All trace of goiter tissue is lost except *a few small basophilic acini. B. Acini destroyed, the epithelium of some acini loosening,* many areas of cells which have lost all contact with acinal walls.

absence of colloid, presenting only degeneration of acinal cells (Fig. 5A). This suggests that the intoxication is due to toxic substances from these cadaveric cells. An area which shows degenerated epithelial cells with obviously degenerated colloid (Fig. 5B) is just one of the types which *disturb the theory of colloid change.*

SYMPTOMATOLOGY

From the foregoing it is obvious that if the student of pathology expects each slide to be nicely decked out with tinctorial changes in the colloid, he will be disappointed. It is only by combining the details of many cases which he has studied in the clinic as well as in the laboratory that he can hope to gain a general picture of these changes. The chief reliance must be placed on the evidence of the clinic, both preoperative and postoperative.

Naturally, goiters removed at the beginning of the cardiotoxic state will show most distinctly the tinctorial changes in the colloid. Once the many complications develop, with associated degeneration, the picture is very confusing. Here more than in any other field of pathology, it is necessary to *cut many blocks of an endless number of* goiters in order to get a fair picture of the *gland as a whole. Even then the student* finds himself confronted only with probabilities, perhaps just possibilities. Even so, a wild clawing for air is better than complacent suffocation.

So far as thyroid enlargement itself is concerned, a great variety of external forms are presented to the examiner. For the most part the goiters show bosselations which are obvious on external examination, but frequently they are uniform and small, hugging the trachea deep down in the

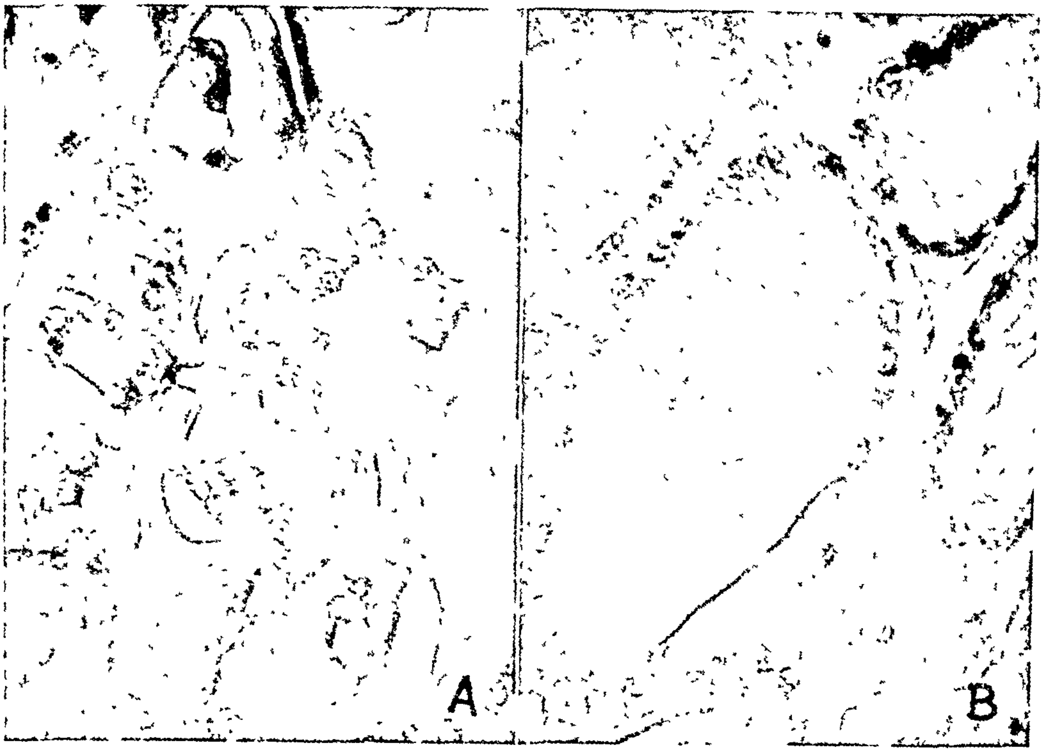

Fig. 5. Clinically cardiotoxic goiter *A* Acini almost devoid of colloid and the acinal cells necrobiotic *B* Colloid granular and basophilic, the acinal cells irregularly staining, some exfoliated

suprasternal notch. The distinctive feature is a hardness to the touch and a sense of fixity. There is not quite the hardness of cancer, yet it is more pronounced than in the usual toxic forms of colloid goiter and lacks the granular surface feel of the primary toxic goiter. Cases of degeneration implanted primarily on large, soft lobulated goiter may, of course, lack this pronounced density; even then, one senses a firmer feel than in the large undegenerated glands.

In early cases it is difficult to say whether the symptoms of heart disturbance are due to a failing heart, or to the goiter as such. This is particularly true with marked loss of weight and nervousness. Physical examination may not detect any cardiac disturbance when the patient is in repose. The work capacity of the patient's heart must be considered rather than the findings on physical examination. A knowledge that cardiac disturbance is the usual end-result of old goiters should put one on guard in such cases and cause one to give particular attention to this phase of the examination.

The heart disturbances due to this type of goiter are different from those of toxic goiter. The heart sounds lack the confident, excited click and the booming first sound of the acutely toxic goiter. The apex beat may be diffuse, but is usually weak and indistinct. Sooner or later the rate and volume become irregular. Evidence of decompensation may find its chief expression in a general sense of weakness and dyspnea. In the more advanced cases, cardiopathies due to goiter are not alleviated by rest and treatment to the same degree as cardiopathies of primary origin. The arrhythmia may continue despite treatment until some terminal process intervenes: hypostatic pneumonia, general inanition or other intercurrent disease. In some cases the heart simply stops without demonstrable excuse and without definite anatomic findings at autopsy. The patient simply "fades out" after operation.

DIAGNOSIS

The chief difficulty in diagnosis lies in the gradual development of heart changes. I believe one may safely assume that any old goiter, no matter what its clinical character and past history, is already elaborating a substance which is inimical to the welfare of the heart muscle. Where a goiter is accompanied with evidence of cardiac disturbance, the dependence of the latter on the former may be assumed in the absence of definite signs of a primary cardiopathy. Nervous heart lesions in persons with simple goiter can be recognized by the soft goiter, and the dependence of the heart disturbances on definite nervous states. These disturbances vary from the pitty-pat of the subdeb to the pronounced paroxysmal tachycardia of the matron.

To the surgeon the silent cardiopathies are of special interest. The heart may show no abnormality until after the operation, when fibrillation develops. In long-standing goiters, particularly when they are hard, a cardiopathy should be assumed to exist. Unaccountable anemia and fatigability and a weary, subdued nervousness should suggest a weak heart to the surgeon.

TREATMENT

Some surgeons believe that the part of the goiter they allow to remain at operation will return to normal. This supposition is difficult to check because we do not know what the normal is. We may admit that this improvement is possible in hyperplastic goiter, but certainly there is no return to normal in goiters such as are illustrated in the present article. The dead cannot rise again so far as a surgeon can see. Removal of the offending goiter, of course, is the only treatment.

The most important part of treatment is preoperative. Even with the best preoperative management, however, there are still some things to be considered on the operating table. The one essential is that the patient not be subjected to more operating at any one time than she can bear. If the patient appears much older than her years, she likely will bear operation badly. If the goiter is very hard and adherent, or if the trachea is soft from pressure of the goiter, only one lobe had best be removed at the first operation. The other lobe may then be removed, but it must all be removed. To do otherwise would be as sensible as to remove all but one or two hemorrhoids in doing a hemorrhoidectomy, on the assumption that they will in time subside and in the meantime will serve as a stimulus and thus prevent shock.

SUMMARY

The author's hypothesis is that the primary factor in cardiotoxic goiter is to be found in the changes in the colloid. This supposition is certainly logical in those cases in which there is complete absence of cellular degeneration and the changes in the tinctorial reaction are all that can be demonstrated. The essential change in cardiotoxic goiter is the regression of the acinal colloid from an acidophilic to a basophilic structure. The treatment is total removal of the thyroid gland. The operation can be done more quickly, the after-course is smoother and postoperative myxedemics are fewer than after the partial operation.

RÉSUMÉ

Goitre cardiotoxique

L'hypothèse de l'auteur est que le facteur primaire dans le goitre thyreotoxique peut être trouvé dans les alterations dans le colloide. Cette supposition est certainement logique dans ces cas dans les quels il y a complete absence de degeneration

laire et les modifications dans la reaction tinctoriale sont tout ce que peut être démontré. La modification essentiale dans le goitre cardiotoxique est la régression du colloïde d'une structure acidophilique à une basophilique. Le traitement est la totale asportation de la glande thyroïde. L'opération peut être faite plus rapidement, le cours après l'opération est plus doux et le mixédème post-opératif moins frequent que après une opération partiale.

ZUSAMMENFASSUNG

Cardiotoxischer Kropf

Des Autor's Hypothese ist, dass der primäre Faktor bei cardiotoxischen Kropf in den Veränderungen des Kolloid zu finden ist. Diese Annahme ist sicherlich bei den Fällen logisch, bei denen eine zelluläre Degeneration vollkommen fehlt und die Veränderungen in den Färberektionen das einzig demonstrierbare sind. Die Hauptsächliche Veränderung bei cardiotoxischen Kropf ist die Regression des acinalen Kolloid von einer acidophilen zu einer basophilen Substanz. Die Behandlung ist totale Entfernung der Schilddrüse. Die Operation kann raschen ausgeführt werden, die Nachbehandlung ist einfacher und das postoperative Myxoedem seltener als nach der partiellen Operation.

SUMARIO

Bocio cardiotóxico

La hipotesis del autor es, que el factor primario en el bocio cardiotóxico es debido a los cambios coloidales. Esta suposición es una verdal lógica, en aquellos casos en los cuales hay una ausencia completa de degeneración celular y cambios en las reacciones tintoreales. Los cambios esenciales en el bocio cardiotóxico es la regresión del colvide acinal, de una estructura acidófila a una basófila.

El tratamiento es el de remover la totalidad de la glándula tiroides. La operación puede ser hecha rápidamente sin dificultad y los trastornos post operatorios son mucho menores que cuando se hace una operación parcial de la glándula.

RIASSUNTO

Gozzo cardiotossico

L'ipotesi dell'A. è che il fattore primario nel gozzo cardiotossico è da ricercarsi nelle alterazioni della sostanza colloide. Questa supposizione è certamente logica in quei casi nei quali c'è una completa assenza di degenerazione cellulare e le alterazioni nella reazione tintoriale sono tutto quelle che può essere dimostrato. L'alterazione essenziale nel gozzo cardiotossico consiste nella regressione del colloide degli acini da una struttura acidofila ad una basofila.

Il trattamento consiste nella rimozione totale della ghiandola. L'operazione può essere fatta più rapidamente, il corso postoperativo è migliore e mixedema postoperativo è meno frequente che dopo una parziale operazione.

SURGEONS OF CENTRAL AND SOUTH AMERICA

Surgeons residing in Central and South America who desire to attend the International Assembly of the International College of Surgeons will please address Dr. Manuel A. Manzanilla, Avenida Tamaulipas Num. 60, Mexico City, D.F.

Lingual Thyroid (Lingual Goiter)

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THE literature dealing with the embryology of the thyroid gland recognizes the infrequency with which the structure of this endocrine body is arrested in its original anlage about the foramen cecum at the base of the tongue, or elsewhere in or under the tongue. Thyroid surgeons of large experience may see one or a few such cases, and thyroid clinics with thousands of cases may observe only a limited number. Nevertheless, nearly 250 cases have been recorded as suspected, diagnosed or unrecognized thyroid tumors at the base of the tongue or in the buccal cavity.

As an uncommon lesion, lacking in characteristic signs for proper recognition and diagnosis, it falls rather under the category of surgical anomalies than under anatomopathological observations calling for timely diagnosis and practical treatment.

These facts notwithstanding, such abnormal structural developments are frequent and consequential enough to call for differential diagnosis, and for suitable treatment to relieve the symptoms or to prevent neoplastic changes, for embryonic rests, ectopic tissue and the like are vulnerable to retrogressive degeneration and neoplasia, or to atypical functional disturbances confusing diagnostic inferences.

These tumor formations, whether they develop at the point of fetal origin of the tongue, the foramen cecum (clinically known as lingual goiters), or originate elsewhere in the structure of the tongue (intralingual goiter) or consist of formations *in front of the larynx (prelaryngeal thyroid* or pretracheal, superior mediastinal or retrosternal, etc., as the anatomical location may indicate) are designated as suggested in Lahey's classification.

The histologic entities in these various locations show practically all types of ordinary thyroid growths—areas of normal-looking acini, distended with diffuse, pink-staining colloid, occasionally showing definite functional activity; or dense connective tissue covered with degenerated columnar epithelium, suggestive of glandular proliferation resembling hyperthyroidism of the toxic nodular type.

A review of the literature shows that Hunt in 1865 reported 91 cases; Doré's thesis in 1922 contributed 81 cases, or a total of 172. Other writers have brought the total to 242. More recently, Cattell reported 2 cases in 7,600 operations on the thyroid at the Lahey Clinic, while Ulrich reported 2 cases in 4,000 at the University of Pennsylvania.

Thus the statistics and bibliography on the subject speak for the infrequency of the congenital formation at the base of the tongue or elsewhere, as well as clarify the subject from the collected information of various writers.

EMBRYOLOGY

According to His's embryology of the tongue, the anterior portion is developed from between the first and second branchial arches, forming dorsally the tuberculum impar, with evagination of the epithelium or median thyroid evagination deeply behind, while still further back and springing *from the second and third branchial arches,* the transverse elevation or copula, and the foramen cecum form the median thyroid evagination, completing the development of the base of the tongue.

Thus the evolution of the base of the tongue, the pharyngeal pouch, the thyreoglossal duct are ultimately represented by the foramen cecum as the anlage or remains of the blind pouch which Bochdalek called the "canalis-excretorius linguae" and which His designated the "ductus lingualis."

The embryology as well as the trend of structural phenomena of tissue developing ectopically suggests possible alterations of function which we fail to understand until the gross pathology, with mechanical or other local disturbances, such as discharges or local bleeding, may explain the unusual syndrome. Just as we recognize the general functional and systemic manifestations met with in ectopic testicular remnants only when they interfere with endocrine balance and development of the bodily and mental functions, it would seem rational that the ectopic thyroid may exhibit functional dislocations difficult to diagnose until the local abnormality reveals itself.

We now come to the main purpose of this paper, to report the observation and treatment of a typical lingual goiter, not diagnosed as such, or even suspected, until the histological report of the removed growth revealed its identity.

CASE REPORT

A female aged thirty-nine, of Italian ancestry but born in the United States, married, had three or four consecutive annual pregnancies, two of which resulted in full term healthy children. Each of the gestation periods was accompanied with bleeding from the mouth in the sixth month of pregnancy.

Examination by her family physician determined the presence of a prominence at the base of the tongue. A surgeon was consulted who confirmed the presence of an enlargement at the base of the tongue, in front of or anterior to the epiglottis and who used thermocautery in an effort to control the local bleeding, presuming of course that the growth was probably of malignant type. Curiously enough the patient states that in each of her pregnancies the bleeding [illegible] until about the sixth month. Another [illegible] who was consulted suspected malignancy and referred the patient to me.

[illegible] I found a bilobate tumor at the [illegible] a central depression or gutter corresponding to the foramen cecum from which the bleeding had been observed. In my clinical search for diagnostic conclusions I naturally leaned to malignancy, although the history of a three-year course without marked changes, either local or systemic, except for periodic bleeding, discouraged the assumption that we were dealing with an active malignancy. Treatment loomed up as the essential problem, laying aside, as of lesser importance, any effort to determine the nature of the growth. Biopsy we deemed obviously contraindicated.

The existence of a tumor at the base of the tongue, with periodic bleeding during gestation, while obscure diagnostically, indicated in our judgment the removal of the growth as the only method of approach to a cure. Having obtained the consent of the patient and family, I performed a preliminary low tracheotomy in order to institute general anesthesia by warmed ether insufflation through the tracheotomy tube. Ten days later I carried out the following radical operative technic.

Median, vertical incision of the lower lip and chin, *down to the hyoid region*, *extraction of a central incisor* tooth and division of the mandible mesially with a chain saw. The rami were retracted laterally, the tongue was drawn forward and the pharynx packed with moist sterile gauze to prevent blood entering the larynx or esophagus. The patient, in a semirecumbent position, was successfully anesthetized throughout the operation. The anterior faucial pillars were divided transversely in the mid-portion to permit freer dislocation forward of the base of the tongue, and the bilobate tumor was thoroughly resected from the base of the tongue as it seemed to be surrounded with a capsule which was very vascular, though no infiltration of the tongue structure could be seen beyond the capsule.

The tumor, when removed, was the size of an English walnut, with two lateral lobes and a central gutter of scar tissue from repeated efforts at thermocoagulation to stop bleeding during gestation. Hemostasis was easily secured by clamp and ligature and the base of the tongue was perfectly reconstructed from its lateral pillars. The faucial wounds were now closed on both sides; the tongue was allowed to fall back into its *normal position*; the packing was removed from the pharynx, the jaw was sutured with silver wire, the lip, chin and neck were closed with subcuticular suture of chromic catgut. The healing of the wound was completed by primary union throughout. The approximation of the rami was such as to obliterate the vacant space left by the extracted tooth, and while two years later we were obliged to remove the wire suture because of local irritation, the cicatrix is perfect and function normal. The tracheotomy fistula healed by granulation, leaving no impediment whatsoever.

The histologic report made by the pathologist came to us as a complete surprise. He found nothing but thyroid parenchyma, with its characteristic acini and here and there colloid substance and connective tissue. The pathologist's impression was that because of the bilobar and thoroughly encapsulated makeup of the tumor, I had probably removed all of the thyroid tissue in this patient and that we should look for signs of hypothyroidism.

This patient has cooperated with us ideally in follow-up observation from year to year. She has enjoyed more than average good health for the past ten years and has gained weight. Her basal metabolic rate, her physical and mental energy have at no time given rise to suspicion of hypofunction or thyroprivia.

On reflection, the location of the tumor, its benign slow growth, its swelling and bleeding coincident with uterine enlargement, resembling thyroid engorgement with the menstrual cycle in pubertal and adolescent goiter, the absence of pain, cachexia and loss of weight, might lead to suspicion of a thyroid type of growth of endogenous and embryonic origin. However, the limited incidence of this type of growth, consequently of experience, has and will probably continue to challenge diagnostic foresight.

SUMMARY

Lingual goiter is an uncommon lesion (250 cases have been reported), lacking in characteristic diagnostic signs. Tumors may develop at the point of fetal origin of the tongue or elsewhere in its structure or in front of the larynx. Histologically, all types of thyroid growths are exhibited.

The embryology of the structure is discussed by the author. A case is reported of a woman who bled from the mouth during gestation. A tumor removed from the tongue by median section of the mandible consisted entirely of thyroid parenchyma. For ten years the patient has been in good health, with no sign of thyroprivia.

BIBLIOGRAPHY

Cattell, R B, and Hoover, W B Lingual Thyroid Gland, Report of a Case and Discussion of Aberrant Thyroid Tissue, S Clin N A 9 1355, 1929

Crotti, André Thyroid and Thymus, Ed 2, Lea & Febiger, Philadelphia, 1922

Hartley, J N J Some Errors in the Development of the Thyroid Gland, Surg, Gynec & Obst 35 543 (Nov), 1932

Lahey, F H Lingual Goiter, Surg, Gynec & Obst 36 395 (March), 1923

Lewis, F T, and Brenner, J L A Test Book of Histology, Ed 3, P Blakiston Sons & Co, Philadelphia, 1927

Ulrich, H F Lingual Goiter, Ann Surg 95 503 (April), 1932

RÉSUMÉ

Thyroide linguale

Le goitre linguale est une lesion pas commune (250 cas ont étés réportés), n'ayant pas des characteristics signes diagnostics. Des tumeurs peuvent se dévéloper dans le point de l'origin fetale de la langue ou ailleurs dans ses structures ou en front du larynx. Histologiquement tous les types de croissance thyroïdienne sont démontrés.

L'embriologie de cette structure est décrite par l'auteur. Un cas d'une femme qui saigna de la bouche pendant la grossesse est réporté. Une tumeur enlevée de la langue avec une section mediane de la mandibule était entièrement composé de parenchyme thyroïdien. Pour 10 années la malade avait été en bonne santé sans de signes de défaut thyroïdien.

ZUSAMMENFASSUNG

Zungen Schilddruse

Lingualer Kropf ist ein seltenes Leiden (250 Fälle wurden beschrieben) mit Abwesenheit der charakteristischen diagnostischen Zeichen. Tumoren können sich an der fetalen Ursprungsstelle der Zunge oder anderwarts in ihrer Struktur, oder vor dem Larynx, entwickeln. Histologisch bieten sich alle Typen von Schilddrusengewebe.

Die Embryologie der Struktur wird vom Autor besprochen. Es wird der Fall einer Frau berichtet, die wahrend der Schwangerschaft aus dem Munde blutete. Der Tumor welcher durch einen Medianschnitt der Mandibula entfernt wurde bestand zur Gänze aus Schilddrüsenparenchym. 10 Jahre war die Patientin gesund ohne Zeichen von Thyreoprivia.

SUMARIO

Tiroides lingual

El bocio lingual es una lesión poco común (250 casos han sido reportados) careciendo de signo diagnóstico característico. El tumor puede revelarse en el punto del origen fetal de la lengua o en otra parte de su estructura o en la parte anterior de la laringe. Son estudiados histológicamente todos los tipos de crecimiento tiroideo.

La estructura embriólogica es discutida por el autor. Se reporta el caso de una mujer que sangraba por la boca durante el tiempo del embarazo. Se removió un tumor de la lengua, por sección media del maxilar, que estaba constituido por parenquima tiroideo. Durante 10 años el paciente ha estado gozando de buena salud y no ha presentado signos de privación tiroidea.

RIASSUNTO

Tiroide linguale

Il gozzo linguale è una lesione non comune che manca di caratteristici segni diagnostici; 250 casi sono stati riportati. Tumori possono svilupparsi nel punto dell'origine fetale della lingua o altrove nelle sue strutture o davanti alla laringe. Istologicamente si osservano tutti i tipi di crescita della tiroide.

L'embriologia di queste strutture viene discussa dall'autore. Viene riportato un caso di una donna che sanguinò dalla bocca durante una gravidanza. Un tumore asportato con una sezione mediana della mandibola consisteva interamente di parenchima tiroideo. Per dieci anni la paziente era stata in buona salute senza segni di deficenza tiroidea.

SCIENTIFIC AND COMMERCIAL EXHIBITS

Those interested in reserving space for their exhibits, please communicate at once with the following: For Mexico, Central America and South America, Dr. Manuel A. Manzanilla, Avenida Tamaulipas 60, Mexico, D.F. For the United States and Canada, Dr. Norman R. Goldsmith, 39-A Gramercy Park, New York City.

Thyroid Surgery

CONCLUSIONS BASED ON TWENTY YEARS OF PRACTICE

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AFTER glancing through several hundred reprints on goiter, dating back to Kocher, the father of goiter surgery, I conclude that little about goiter remains to be discussed. However, at Dr. Crotti's kind invitation, I shall try to summarize some of the important facts relating to thyroid surgery which I have learned during twenty years' study of this problem.

DIAGNOSIS

As a student of Dr. Henry Plummer's, I became impressed with the importance of a correct diagnosis in thyroid disease before giving any consideration to surgery. It was Plummer who first differentiated between exophthalmic goiter and toxic adenoma; and whether or not one subscribes to this view, he must admit that there is a marked difference in their surgical treatment. For example, the ligation operations which were once so popular were of some temporary benefit in exophthalmic goiter, but of no value in toxic adenoma. This fact was brought out by Judd two decades ago.

When Plummer introduced the use of Lugol's solution in 1922, it was uncertain whether or not iodine would prove of as much benefit in toxic adenoma as in exophthalmic goiter. Articles appeared stating that both types responded equally well, but I believe these conclusions were incorrect. In a study of 279 cases of toxic adenoma operated upon at the Jackson Clinic, it was shown by Freeman and the writer in 1936 that approximately 62 per cent were benefited or not affected by iodine, while 38 per cent were made worse. Thus it is apparent that the diagnosis is of great importance. Otherwise, the thyroid surgeon may lean too heavily on iodine when operating upon toxic adenomas.

Not only is the preoperative improvement incomparable to the remarkable change effected by iodine in exophthalmic goiter, but the postoperative response likewise shows a great difference. The cause of death following thyroidectomy for toxic adenoma is undetermined, but death is not prevented by iodine. On the other hand, even the most severe postoperative reactions in exophthalmic goiter can usually be controlled by iodine, unless the patient is iodine-fast.

All cases of hyperthyroidism should be given iodine both before and after operation, because it is not always possible to establish a clear-cut diagnosis. Adenomas are associated with a hyperplastic gland in about one out of four cases. Giving iodine for a short period, such as one or two weeks, does little harm even to those cases of adenomata that react unfavorably.

In establishing a diagnosis of hyperthyroidism and in gauging the result of thyroidectomy, the metabolic rate is often of inestimable value. This much-abused test, however, is undoubtedly responsible for many serious errors in the diagnosis and treatment of goiter. Under the heading of "Needless Thyroid Surgery," I previously reported a series of one hundred cases in which operation had been advised for toxic goiter, but in all of which, it seemed to me, the thyroid gland was functioning normally. This report was given before the Hennepin County (Minnesota) Medical Society; at the same meeting Dr. Bell, professor of pathology at the University of Minnesota Medical School, reported an equal number of surgically removed thyroid glands which presented a normal appearance. This unfortunate condition undoubtedly prevails in other sections of the country where, because of the scarcity of goiter, the correct diagnosis is still more easily missed.

It is well, therefore, for the ambitious young surgeon who is expecting to do thyroid surgery to remember the words of Dr. Charles Mayo—that exophthalmic goiter should not be classed among the diseases requiring emergency operation.

PSYCHOLOGY

Psychology plays a more important part in the successful handling of the goiter patient than in the care of any other type of surgical case. The confidence of these patients must be built up step by step, so that instead of fearing operation, they look forward to it as a means of alleviating their symptoms. Rarely should surgery be discussed with hyperthyroid patients at the first visit. It is a good plan to tell them of similar cases, preferably of friends or acquaintances, and of people just as sick or sicker who regained their health by appropriate measures. It is also advisable to let them visit with those who are convalescing. The exophthalmic goiter patient who goes to the operating room in the proper frame of mind will usually have a much milder convalescence than the patient who is emotional and apprehensive. We frequently spend days preparing our patients, often using many doctors, nurses and patients to build up morale. It is our belief that psychology, iodine and surgical technic are the three most important factors in the successful treatment of exophthalmic goiter.

PREOPERATIVE USE OF IODINE

The use of iodine in relation to toxic goiter is a much-discussed and much-abused therapeutic measure. Preferably, all cases should receive iodine preoperatively from one to two weeks. Occasionally, advanced cases of exophthalmic goiter may require a few more days of preparation. Ninety-five per cent of patients will receive a maximum of benefit within this time unless they already have been taking iodine. At the 1925 meeting of the American Association for the Study of Goiter, I reported the first case of the latter type and suggested the term "iodine-fast." Patients who have become refractive to iodine have proved a serious surgical problem, and the unwarranted use of iodine over long periods of time has resulted in an increased mortality rate. Postoperatively, they react like patients seen in the pre-Lugol era, with a typical hyperthyroid crisis. They should be handled with great care; thyroidectomy is preferably done in two stages.

The amount of iodine given preoperatively does not seem to be a vital factor, Thompson feeling that as satisfactory results are obtained with one drop a day as with larger doses. This has not been my experience, however, and all my patients receive at least 30 drops a day during this period.

POSTOPERATIVE USE OF IODINE

Postoperatively, too, there is some disagreement. Davison, of Northwestern Medical School, reports that his patients have gotten along very well without any iodine. It has been my unfortunate experience to see three fatal postoperative crises occur as the result of failure of a nurse or intern properly to administer iodine. All of these patients had been successfully operated upon by excellent surgeons. In 1922, in the very early days of Lugol's solution, I nearly lost a patient because the head nurse misplaced the only available bottle and the patient was without iodine for several hours following thyroidectomy. We give our exophthalmic goiter patients from ten to twenty doses of Lugol's solution (10 minims each). If this does not maintain a satisfactory condition, Lugol's is given by rectal instillation, subcutaneously, by duodenal tube or, rarely, intravenously.

As previously stated, iodine is seldom a deciding factor in the postoperative recovery of patients with toxic adenoma. We routinely give three doses of 10 minims each, hoping that it may be of some benefit. Rarely does it seem to influence the outcome. These patients receive no iodine after a week, but it is important to continue giving it to the hyperplastic type of patient for months. It is impossible to state a fixed time, because patients must be treated individually according to the rate of recovery, the amount of weight gain and the metabolic rate.

ANESTHESIA

Anesthesia has been a very important factor in our surgical treatment of hyperthyroidism. Only once during the past twenty years have we used a general anesthetic, and this was at the particular request of a friend. Since that time all similar requests have been refused, because we feel that local anesthesia preceded by phenobarbital, pantopon and scopalomine is an ideal anesthetic.

We have never seen any harmful effects from scopalomine when used in small doses, such as 1/150 gr. for patients under fifty years of age and 1/200 gr. for patients over this age. In 1928 a superficial nerve-block anesthesia, which blocks off the cervical sympathetic nerve supply, was developed. This method proved much more satisfactory than infiltration anesthesia, because it does not distort the anatomical structures with novocain edema. It is a simple method to learn, takes but a few moments to do, and gives a perfect anesthesia.

COMPLICATIONS

Most surgeons doing goiter operations sooner or later encounter the various unfortunate complications attendant upon thyroidectomy. Of these, hemorrhage, tetany and nerve injury are the most important. Hemorrhage can best be avoided by sharp dissection of the capsule rather than stripping with the finger, thus avoiding injury to the median or lateral branch to the jugular. In delivering an intrathoracic goiter, great care must be exercised in not stretching the veins until they tear. Rather, the gland should be removed from within the capsule until such tension is relieved. At completion of the operation, if local anesthesia is used, the patient can be asked to cough and any bleeding points may then be easily located.

It has been my good fortune to have had no cases of postoperative tetany since 1926. This complication can be avoided by using the following technic: In resecting the goiter, tend to hollow it out within its capsule, as one would scoop out an egg from its shell. Of course, this process must not be carried too deeply, or there will be danger of injury to the nerve. By staying inside the capsule and leaving at least one-half of it on the lateral walls, the possibility of tetany is practically eliminated. This lateral shell of tissue can be hollowed out very thin, so that in the hyperplastic type of gland too much tissue is not allowed to remain. Operation may best be performed by use of the electrosurgical loop.

Probably the two most likely points of nerve injury are at the inferior poles and along the lower lateral borders of the gland. At the lower poles, the hemostats should always be placed so that gland tissue is clearly seen beneath them. The amount left depends upon the type of gland; in adenomatous goiter it is always better to leave more tissue.

If the technic described above for avoiding injury to the parathyroid glands is followed, danger of injury to the recurrent laryngeal nerves is minimized.

There are many other important points concerning thyroid surgery that should be considered, but if the younger surgeon, for whom these suggestions are offered, will overcome these principal obstacles, his problems will be simplified.

SUMMARY

The author was early impressed with the importance of differentiating between exophthalmic goiter and toxic adenoma as a basis for correct use of iodine. In a study of 279 cases of toxic adenoma the author found that 62 per cent were benefited or not affected by iodine, while 38 per cent were made worse.

Postoperatively, iodine does not prevent death in toxic adenoma as in exophthalmic goiter. All cases of hyperthyroidism, however, should be given iodine before and after operation to avoid danger of error in diagnosis.

Many needless goiter operations are the result of errors in metabolism tests. The author considers psychology, iodine and surgical technic the three most important factors in successful treatment of exophthalmic goiter.

The term "iodine-fast" is suggested for patients with exophthalmic goiter who have been kept on iodine so long that it is no longer of benefit. The author usually gives 30 drops a day preoperatively for one to two weeks, and from 10 to 20 doses (of 10 minims each) in the twenty-four hours after operation. Iodine is given for a week postoperatively in cases of toxic adenoma but is usually continued for several months in exophthalmic goiter.

For anesthesia, the superficial nerve-block method, with the additional use of scopalomine and pantopon, is employed. Special operative technics are recommended for avoiding complications of hemorrhage, tetany and nerve injury.

RÉSUMÉ

Chirurgie sur la thyroïde

L'auteur fut tòt impressioné par l'importance de différentier entre goitre exophtalmique et adenome toxique comme la base pour un correct usage du iode. Dans un étude de 279 cas de adenome toxique l'auteur trouva que 62% étaient benefiés ou pas touchés par le iode, tandis que 38% devenirent plus malades. Après l'opération le iode ne prévient pas la mort dans l'adenome toxique ni dans le goitre exophtalmique. Tous les cas de hyperthyroïdisme, cependant, devraient recevoir le iode avant et après l'opération pour éviter le danger d'erreur dans le diagnostique.

Beaucoup d'opérations pas necessaires pour le goitre sont le résultat d'erreurs dans les épreuves du metabolisme. L'auteur considère la psychologie, le iode et la téchnique chirurgicale les trois plus importants facteurs dans le traitement heureux du goitre exophtalmique.

Le terme "iodo-résistant" vient suggeré pour les malades avec goitre exophtalmique qui ont recu le iode depuis si longtemps que il n'est plus d'aucun profit. L'auteur generalement donne 30 gouttes par jour avant l'opération pour une ou deux sémaines, et de 10 a 20 doses (de 10 minims chacune) dans le 24 heures après l'opération. Le iode est donné pour une sémaine après l'opération dans les cas de adenome toxique, mais il est generalement continué pour plusieurs mois.

Pour l'anesthesie la méthode du bloc superficial du nerve avec l'usage additionel de scopolamine et pantopon, est employé. Des téchniques opératives speciales sont récommendées pour éviter complications de hemorragie, tetanie ou dommage des nerves.

ZUSAMMENFASSUNG

Schilddrüsenchirurgie

Der Autor war schon frühzeitig überzeugt, dass als Basis für eine korrekte

Jodanwendung, zwischen exophthalmischen Kropf und toxischen Adenoma unterschieden werden muss. Der Autor fand beim Studium von 279 Fällen von toxischen Adenoma, dass 62 per cent durch Jod gebessert oder nicht beeinflusst wurden, während 38 per cent verschlechtert wurden. Postoperativ verhindert Jod bei toxischen Adenoma nicht den Tod des Patienten wie bei exophthalmischen Kropf. Es soll jedoch bei allen Fällen von Hyperthyreoidosen vor und nach der Operation Jod verabreicht werden, um der Gefahr einer Fehldiagnose vorzubeugen.

Viele unnotwendige Kropfoperationen sind die Folge von falschen Grundumsatzbestimmungen. Der Autor hält Psychologie, Jod und chirurgische Technik für die drei wichtigsten Faktoren der erfolgreichen Behandlung von exophthalmischen Kropf.

Der Ausdruck "Jod-fest" wird für Patienten mit exophthalmischen Kropf vorgeschlagen, welche so lange unter Jod standen, dass es bereits seine Wirksamkeit verloren hatte. Der Autor verabreicht gewöhnlich postoperativ 30 Tropfen täglich für 1-2 Wochen und zwischen 10 bis 20 Dosen (von 10 minims jede) in den vierundzwanzig Stunden nach der Operation. Jod wird postoperativ eine Woche lang in Fällen von toxischen Adenoma gegeben, wird aber gewöhnlich für mehrere Monate bei exophthalmischen Kropf fortgesetzt.

Als Anaesthesie wird die oberflachliche Nerven-Block Methode mit Zusatz von Scopolamin und Pantopon verwendet. Es werden spezielle operative Methoden zur Vermeidung von Komplikationen wie Blutungen, Tetanie und Nervenverletzungen, empfohlen.

SUMARIO

Cirugía del tiroides

El autor piensa que es de gran importancia la diferenciación entre el bocio exoftalmico y el adenoma tóxico para el correcto uso del yodo. En un estudio de 279 casos de adenoma tóxico el autor econtró que el *62* por ciento fueron beneficiados o no afectados por el yodo, mientras que el 38 por ciento empeoraron. En el postoperatorio, el yodo no evitó la muerte en el adenoma tóxico, como en el bocio exoftalmico. En todos los casos de hipertiroidismo, se dará yodo antes y despues de la operación para evitar el peligro de un error en el diagnóstico.

Muchas operaciones innecesarias del bocio son el resultado de errores en las pruebas del metabolismo. El autor considera que los datos fisiológicos, el yodo y la técnica quirúrgica, son los tres principales factores para un buen éxito en el tratamiento del bocio exoftalmico.

El término "abstinencia de yodo" se sugiere para pacientes con bocio exoftalmico quienes han estado tomando yodo más del tiempo que se requiere para obtener beneficios. El autor generalmente da 30 gotas al día antes de la operación, por espacio de una a dos semanas y de 10 a 20 dosis (de 10 como mínimo cada una) veinticuatro horas despues de la operación. El yodo es dado por espacio de una semana despues de la operación del adenoma tóxico, en tanto que en el bocio exoftalmico se continua dando por varios meses.

Para la anestesia, se usa el bloqueo superficial del nervio, por la Escopolamina y Pantopon. Técnicas operatorias especiales son recomendadas para evitar complicaciones por hemorragia, tétanos y herida del nervio.

RIASSUNTO

Chirurgia tiroidea

L'A. fu colpito dall'importanza della differenza tra gozzo esoftalmico e adenoma tossico come base per un corretto uso dello iodio. In uno studio di 279 casi di adenoma tossico l'A. trovò che 62% trassero beneficio o non furono affetti dallo iodio, mentre 38% peggiorarono. Dopo l'opera-

zione lo iodio non previene la morte nell'adenoma tossico o nel gozzo esoftalmico. Tutti i casi di ipertiroidismo tuttavia dovrebbero ricevere iodio prima e dopo l'operazione per evitare il pericolo di errori nella diagnosi.

Molte operazioni sul gozzo non necessarie sono il risultato di errori nelle prove sul metabolismo. L'A. considera psicologia, iodio e tecnica chirurgica i tre più importanti fattori nel trattamento fortunato del gozzo esoftalmico.

Il termine "iodio-resistente" viene suggerito per i pazienti con gozzo esoftalmico che hanno ricevuto iodio per così lungo tempo che non è più di alcun effetto. L'A. di solito dà 30 gocce al giorno prima della operazione per una o due settimane, e da 10 a 20 dosi (di 0.6 grammi ciascuna) nelle 24 ore dopo l'operazione. Lo iodio viene dato per una settimana dopo l'operazione nei casi di adenoma tossico, ma è generalmente continuato per parecchi mesi nel gozzo esoftalmico.

Per l'anestesia viene usato il metodo del blocco superficiale del nervo con in più l'uso della scopolamina e del pantopon. Speciali tecniche operative vengono raccomandate per evitare complicazioni di emorragie, tetano e lesioni nervose.

INTERNATIONAL ASSEMBLY HEADQUARTERS

Headquarters for the meeting of the International Assembly of the International College of Surgeons, August 10 to 14, 1941, will be at the Hotel Reforma, Mexico, D.F. Date of the meeting of the House of Delegates will be announced later.

A New and Function-Restoring Operation for Bilateral Abductor Cord Paralysis

SECOND REPORT

BRIEN T. KING, M.D.
SEATTLE, WASHINGTON

IN the March 4, 1939, issue of the *Journal of the American Medical Association*, I made a preliminary report on "A New and Function-Restoring Operation for Bilateral Abductor Cord Paralysis." At the time of that report, three patients had been subjected to the operation and the results obtained in those cases seemed to warrant a report of the procedure and a discussion of the theories upon which it had been developed.

Since then twenty-five additional patients have been operated on, and it now seems fitting to report such new ideas as have been gained from a larger experience, and to alter some of those set forth in my preliminary report.

It must be understood first that all motor nerve paralyses are in general principle the same. The only differences in motor nerve paralyses in various parts of the body are due to losses of the respective functions of the affected muscles.

Take, for example, the muscles of the larynx and those in the forearm, which serve very different purposes. The pathologic changes that take place in the affected muscles are the same in both. There is first flaccid paralysis, followed by atrophy, fibrosis and contractures. Contractures of muscles in the hand and forearm produce one set of deformities, contractures in the muscles of the larynx an entirely different set of physiologic and clinical disturbances.

INJURIES TO RECURRENT LARYNGEAL NERVES

All the muscles of the larynx are supplied by two sets of nerves, the superior and inferior (or recurrent) laryngeal nerves. The recurrent nerves supply all the abductor and adductor muscles of the vocal cords as well as the constrictors of the glottis. The superior laryngeal nerves supply only the cricothyroid muscles. The function of this pair of muscles is to alter the anteroposterior diameter of the larynx. In so doing they act as tensors of the vocal cords (see Figs. 1, 2 and 3).

The larynx has three functions:

1. Air exchange.
2. Sound production.
3. Defense against the entrance of other substances than gases into the lung.

All these functions are primarily controlled by the muscles supplied by the recurrent nerves. The cricothyroid muscles affect only the pitch of the voice.

When injury to both recurrent nerves takes place, there is immediate loss of voice and loss of the defensive mechanism. Air exchange may or may not be seriously disturbed as an initial symptom. That depends upon the position of the cords immediately following paralysis. In the majority of instances, the cords assume a modified cadaveric position and are in a very relaxed or flaccid state. There is a tendency for the cords to be sucked into the [illegible] partially obstruct the infl[illegible] rent. The degree of obstruction depends upon the extent to which the cords and the conus elasticus are sucked into the ring of the cricoid cartilage.

Following bilateral recurrent nerve paralysis, immediate tracheotomy may be necessary to prevent suffocation. As a rule, the immediate degree of obstruction is not sufficient to necessitate tracheotomy. It is characterized, however, by inspiratory stridor and complete loss of voice, except for a whisper which is not a laryngeal sound. There is also loss of the function of the defensive mechanism. This allows fluids to enter the larynx and trachea. If a patient dies in the first few days following bilateral recurrent nerve paralysis, death is due to suffocation, or to drowning in the patient's own secretions, or to ingested fluids, or to a combination. Death may also occur because of pneumonia of a foreign substance type.

If immediately following injury to both recurrent nerves, marked respiratory embarrassment develops, tracheotomy should be performed at once. The wound will become infected, but the danger from such infection is far less than that which results from the respiratory obstruction which develops in a certain percentage of nerve injuries.

RETURN OF FUNCTION

The defensive mechanism is the first to return to function. This comes about so early that it cannot be explained on any other basis than a change in swallowing habits on the part of the patient. The epiglottis does not normally close the larynx like a trap door. In conjunction with the constrictors of the glottis, it closes the larynx and shunts food and fluids laterally into the pyriform fossae. At the same time the suprahyoid group of muscles elevates the larynx, which opens the esophagus to the reception of food or fluids. Within a few days patients learn to swallow in small amounts, and with the aid of the unparalyzed muscles of swallowing, this difficulty is soon partially rectified.

Changes that occur in the vocal mechanism are much more slowly rectified. They are not much, if at all, affected by the patient's training or efforts. The cords are at first relaxed in the cadaveric position. As fibrosis and contractures take place, the cords gradually are drawn into the midline position. As the contractures increase and the cords are drawn closer together, the problem of air intake becomes increasingly difficult. A period of six months to one year usually elapses between paralysis and pronounced obstructive dyspnea. In the past, about half of the persons so affected have had permanent tracheotomy. The others are in large measure chronic invalids.

Few surgical accidents or complications are followed by such tragic sequences as bilateral cord paralysis. Two patients I operated on had been taken off the street in a state of coma or suffocation anesthesia and rushed to hospitals where tracheotomy was performed without the need of anesthetic drugs. About one half of such patients are wearing tracheotomy tubes when examined.

The sequence of events in the average case is briefly as follows: immediate loss of voice, stridor, difficulty in swallowing—especially fluids, improvement in capacity to swallow, temporary improvement in stridor. In a few months the voice begins to return, dyspnea begins to develop. As the voice improves, dyspnea is intensified. Stridor gradually returns with improvement in the voice. It becomes so loud during sleep that many of the patients are social outcasts.

THEORY OF OPERATION

When I first began to experiment with this problem, it was on the theory that a muscle might be transposed to the arytenoid cartilage and subsequently develop a capac-

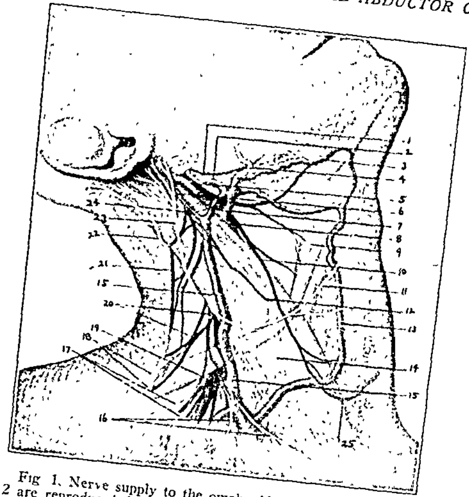
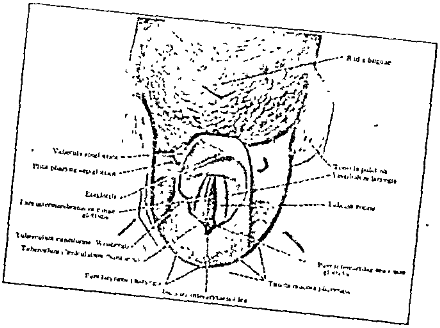


Fig 1. Nerve supply to the omohyoid muscle. (Figs. 1 and 2 are reproduced from Callandar, C. L: Surgical Anatomy, Philadelphia, W B Saunders Company, 1933.) 1, Ramus marginalis mandibula nervi facialis; 2, vena facialis posterior; 3, vena submentalis, 4, vena facialis anterior; 5, nervus hypoglossus; 6, vena auricularis posterior; 7, vena facialis communis, 8, vena jugularis interna, 9, musculus omohyoideus, 10, ramus descendens nervi hypoglossi; 11, nervus cutaneus colli; 12, nervus ansa hypoglossi, 13, vena jugularis anterior, 14, musculus sternocleidomastoideus; 15, vena jugularis externa, 16, nervi supraclaviculares anteriores, 17, nervi supraclaviculares medii, 18, nervi supraclaviculares posteriores; 19, plexus brachialis, 20, trunks of supraclavicular nerves, 21, ramus externus nervi accessorii; 22, nervus occipitalis minor, 23, nervus auricularis magnus; 24, nervus cervicalis III; 25, arcus venosus jugularis



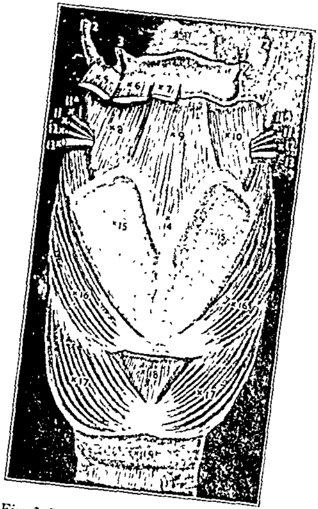


Fig 3 Hyoid bone, thyroid cartilage and external ligaments and muscles of larynx. (Figs 3, 4, 5 and 6 are reproduced from Barnhill, J F Surgical Anatomy of the Head and Neck, Baltimore, William Wood & Co, 1937) 1, Epiglottis, 2, 2, superior horns of hyoid bone, 3, 3, lesser horns of hyoid bone, 4, body of hyoid bone, 5, thyrohyoid muscle; 6, omohyoid muscle; 7, sternohyoid muscle, 8, 9, 10, fasciculi of thyrohyoid ligament, 11A, exit of lymphatic trunk from larynx; 11, exit of vein from larynx, 12, entrance of superior laryngeal nerve; 13, entrance of internal branch of superior laryngeal artery, 14, thyroid notch, 15, 15, wings of thyroid cartilage, 16, 16, fasciculi of inferior constrictor muscle; 17, 17, cricothyroid muscles; 18, cricothyroid membrane (middle cricothyroid ligament), 19, cricoid cartilage

←Fig 2. The posterior portion of the tongue and its relatio[illegible] the aditus of the lary[illegible] ter S[illegible] ity to replace the function of cricoarytenoideus posticus muscle. It was hoped that the cords could thus be opened on inspiration and allowed to close to the phonation position during relaxation of the transposed muscle. On the cadaver this principle seemed to work satisfactorily.

In cases of long-standing bilateral cord paralysis some new problems were encountered, chief among which was an immobile cricoarytenoid joint. These joints were in a state of fixation that in effect amounted to ankylosis. It was necessary to cut the joint capsule to re-establish motion in the joint. When a suture was placed through or around the arytenoid cartilage submucously and traction made on the suture, the cord on that side was found, on observation through a laryngoscope, to open readily. If traction was not continuous on the suture, the cord had a decided tendency to resume the midline position. By drilling a hole in the thyroid cartilage and passing the suture through it and then tying it, the cords remained separated. So the operation that was conceived as a method of opening the cords by the use of an extraneous muscle in actuality developed into a new method of cord displacement. In all but one of the operations I have performed for cord paralysis, the omohyoid has been transposed.

The suture material used for anchoring the arytenoid cartilage to the thyroid is catgut. A special needle is needed to surround the cartilage, as this is the most difficult technical detail in the entire operation. (Davis and Geck have manufactured an atraumatic needle threaded with no. 0 chromic gut and marketed under no. P-271, which will be found of great value in performing the operation.)

thyroid cartilage are separated. This will bring the omohyoid into view. The inner border and posterior surface are carefully avoided, except for a distance of ¼ inch nearest to its attachment to the hyoid bone. Branches of the descendens hypoglossi enter the outer border, also its blood supply. It is very important to avoid injury to these.

The muscle is then ligated with chromic catgut from ½ to ¼ inch below the hyoid bone. The muscle is unfortunately too long to exert traction on the arytenoid cartilage unless shortened to the proper length. Its tendinous attachment to the hyoid bone cannot be used for attachment to the arytenoid cartilage because of the excessive length of the muscle. The sheath of the muscle is so thin that it offers little support to sutures. This problem was met by ligating the muscle belly with chromic catgut about ¼ inch below the hyoid bone and dividing the muscle distally to the ligature. The ligature thus creates a cuff behind which sutures hold in a satisfactory manner.

There is a space of about 1½ inches along the outer border of the thyroid cartilage in which no important structure is encountered. It extends from the tip of the superior cornu of the thyroid cartilage to the inferior cornu. Above the tip of the superior cornu there is danger of injury to the internal division of the superior laryngeal nerve. At the inferior cornu there is danger of injury to the external division of the same nerve. Along the border of the thyroid cartilage are to be found the attachments of the inferior constrictor of the pharynx. These fibers must be cut. The pharyngeal mucosa is then exposed. The pharyngeal mucosa does not contain either longitudinal or circular fibers beneath it, as does the esophagus, and care must therefore be exercised in separating it from the posterior surface of the cricoid cartilage.

The arytenoid cartilages articulate with the cricoid on its posterior and outer borders. They, with the cartilages of Wrisberg and Santorini, act like corset stays in a rather thin wall that separates the openings of the larynx and esophagus. The arytenoid cartilages sit on a facet-like joint and extend upward for about ½ inch. The pharynx must be separated from the posterior spinous border of the arytenoid cartilage. In this dissection, one must be careful to avoid making an opening into either the pharynx or the larynx. The muscular process of the arytenoid cartilage will be exposed in this maneuver. Immediately beneath the muscular process is the facet-like joint. This, like any joint that has been immobilized for years, is stiff and its ligamentous capsule contracted. I have found it necessary to mobilize the arytenoid cartilage by cutting the ligamentous capsule of its joint on three sides, the mesial, the outer, and the posterior, the last of which also divides the atrophic fibers of the cricoarytenoideus posticus muscle.

When the pharyngeal mucosa has been dissected out of the pyriform fossa and away from the posterior cricoid region as far as the midline, it is well first to identify the muscular process of the arytenoid cartilage. Then slip a sharp knife under this process. It will enter the joint. The capsule is then thoroughly divided. This very definitely establishes helpful landmarks. The interarytenoideus muscle is then divided near the arytenoid cartilage. This adds to the mobility of the cartilage and cuts the contractural ring of the glottis. It is then desirable to place two no. 0 chromic catgut sutures around the cartilage, one for fastening

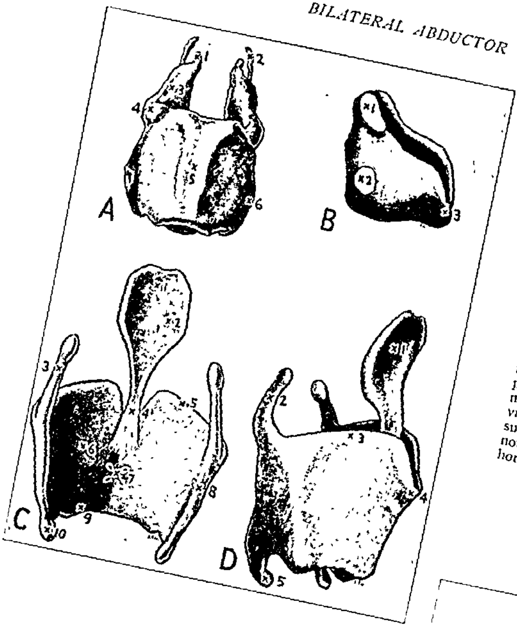


Fig. 4. A, Posterior view of cricoid and arytenoid cartilages 1, corniculate cartilage, 2, cuneiform cartilage, 3, arytenoid cartilage, 4, muscular process of arytenoid cartilage, 5, median ridge, posterior surface of cricoid cartilage; 6, lateral view of [illegible] cartilage. B, Lateral view of cricoid cartilage (note wide posterior portion making completed ring) 1, facet for articulation with arytenoid cartilage, 2, facet for articulation with lower horn of thyroid cartilage; 3, anterior part of cricoid ring C, Thyroid cartilage from behind, showing interior surface· 1, epiglottis, 2, pits for glands in epiglottis, 3, superior cornu of thyroid cartilage; 4, ligament of epiglottis, 5, superior rim, 6, interior surface of thyroid cartilage; 7, site for anterior attachment of true and false vocal cords, 8, posterior margin of cartilage, 9, inferior margin; 10, inferior cornu D, Lateral view of thyroid cartilage· 1, epiglottis, 2, superior cornu; 3, superior margin; 4, notch of thyroid cartilage; 5, inferior horn

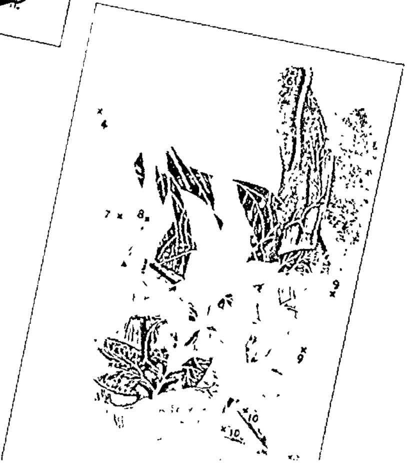


Fig 5. Anteroposterior section of larynx, showing left half. Mucosa has been removed from muscles. The superior and recurrent laryngeal nerves are shown supplying the internal muscles 1, Superior laryngeal nerve, 2, external branch; 3, internal branch; 4, superior horn of thyroid cartilage, 5, main branch of internal laryngeal nerve; 6, epiglottis; 7, 8, corniculate cartilages; 9, 9, cut edge of thyroid cartilage midline; 10, 10, cricothyroid muscle; 11, branch of recurrent nerve entering arytenoideus posticus, 12, section of esophagus behind cricoid cartilage, 13, rings of trachea, 14, recurrent laryngeal nerve A branch of recurrent laryngeal nerve is shown entering cricoarytenoideus posticus Immediately above the cricoarytenoideus posticus the recurrent nerve enters the cricoarytenoideus lateralis, and just above the latter it enters the thyroarytenoideus Only the external branch (2) of the superior laryngeal nerve enters any muscle All other branches go to the mucosa and are cut off, as shown The recurrent nerve (14) supplies all the intrinsic muscles except the cricothyroideus (10)

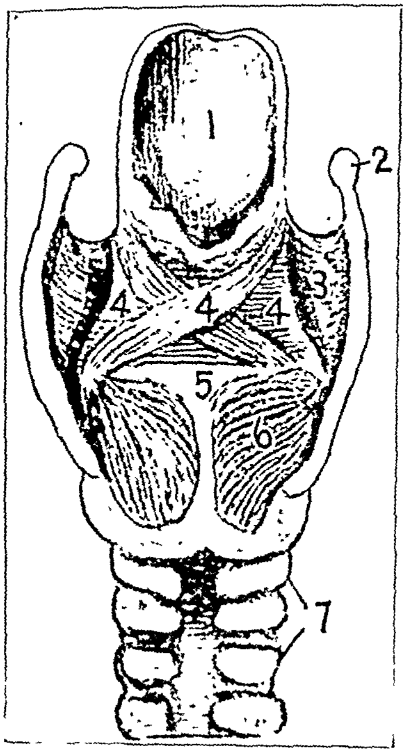


Fig. 6 Posterior view of larynx and upper part of trachea. Some of the intrinsic muscles are shown. A study of these muscles, their attachments and the laryngeal cartilages will give a good understanding of the muscular function. 1, *Epiglottis, running downward and backward,* from which on either side is the airy epiglottis ligament (the little swellings on this ligament indicate the position of the cuneiform and corniculate cartilages); 2, superior cornu of thyroid cartilage; 3, inner surface of thyroid cartilage; 4, 4, 4, arytenoideus, showing different direction of its fibers; 5, posterior surface of cricoid cartilage; 6, cricoarytenoideus posticus; 7, upper tracheal rings

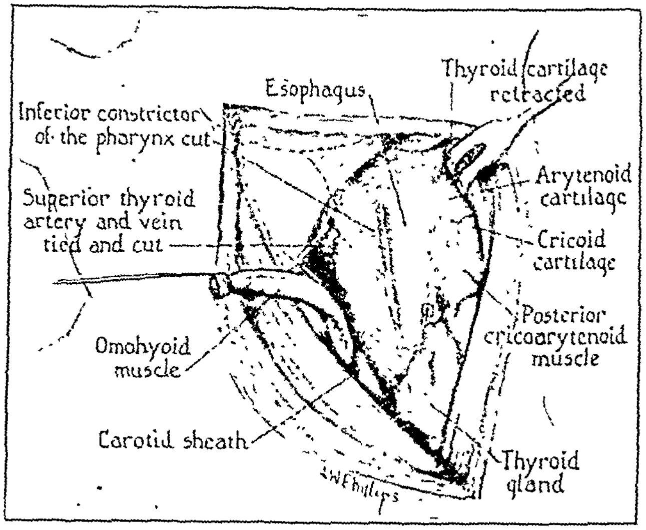

Esophagus
Thyroid cartilage retracted
Inferior constrictor of the pharynx cut
Arytenoid cartilage
Superior thyroid artery and vein tied and cut
Cricoid cartilage
Posterior cricoarytenoid muscle
Omohyoid muscle
Carotid sheath
Thyroid gland
W Phillips

Fig. 7. The inferior constrictor of the pharynx and the superior thyroid artery and vein tied and cut.

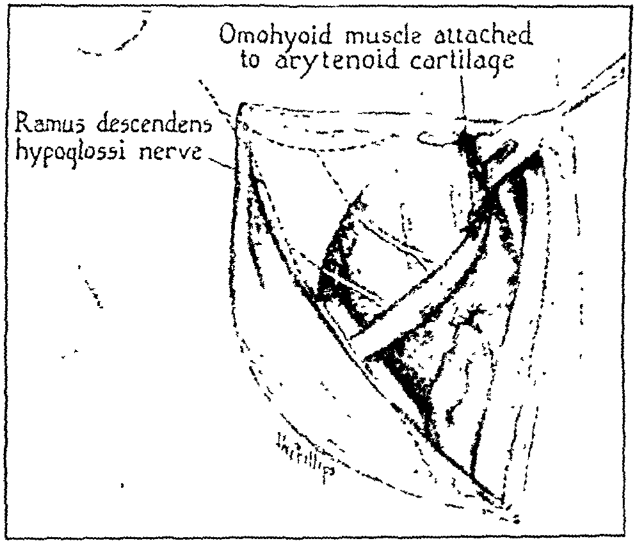
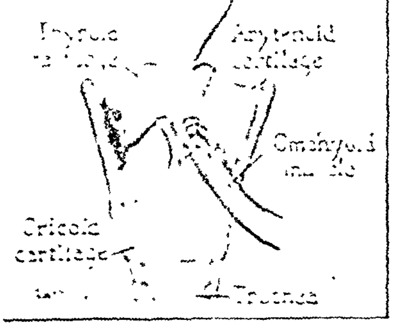

Omohyoid muscle attached to arytenoid cartilage
Ramus descendens hypoglossi nerve
W Phillips

Fig 8. The omohyoid muscle attached to the arytenoid cartilage.



←Fig 9 Procedure in cases of early involvement; reconstruction features omitted.

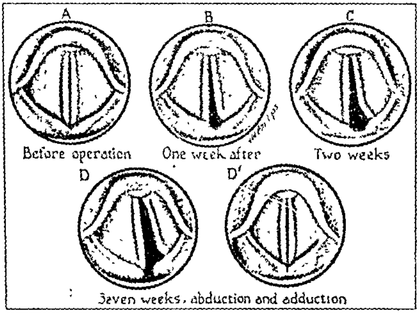


Fig 10. The vocal cords in action.

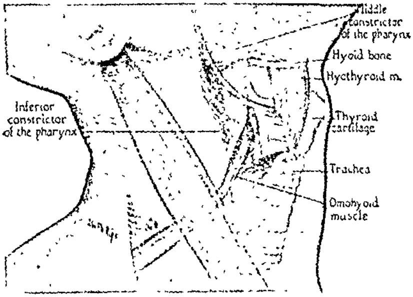

Middle constrictor of the pharynx
Hyoid bone
Hyothyroid m.
Inferior constrictor of the pharynx
Thyroid cartilage
Trachea
Omohyoid muscle

Fig 11 The new position of the omohyoid at the close of the operation.

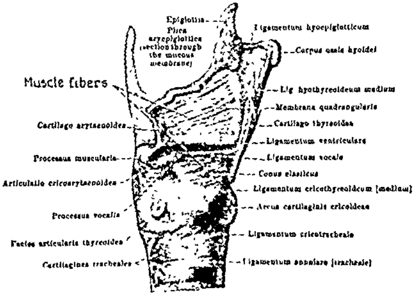

Epiglottis
Plica aryepiglottica (section through the mucous membrane)
Ligamentum hyoepiglotticum
Corpus ossis hyoidei
Muscle fibers
Lig. hyothyreoideum medium
Membrana quadrangularis
Cartilago arytaenoidea
Cartilago thyreoidea
Ligamentum ventriculare
Processus muscularis
Ligamentum vocale
Conus elasticus
Articulatio cricoarytaenoidea
Ligamentum cricothyreoideum [medium]
Arcus cartilaginis cricoideae
Processus vocalis
Ligamentum cricotracheale
Facies articularis thyreoidea
Cartilagines tracheales
Ligamentum annulare [tracheale]

Fig 12 Note particularly the muscle fibers of conus elasticus and membrana quadrangularis In recent paralysis these membranes are flaccid, later they are involved in the contractures (Figs. 12 and 13 are from Spalteholz, Werner: Hand Atlas of Human Anatomy, Philadelphia, J. B. Lippincott Company, vol. 3.)

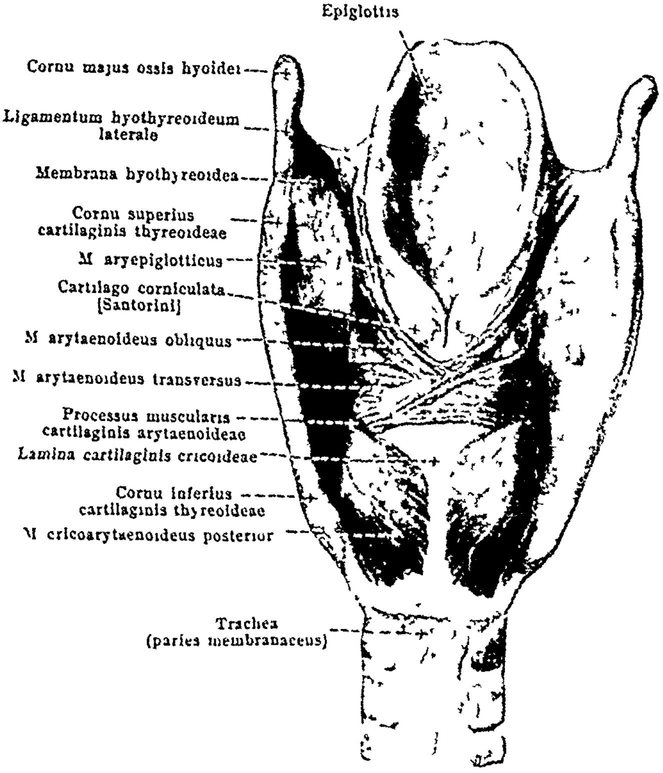

Epiglottis
Cornu majus ossis hyoidei
Ligamentum hyothyreoideum laterale
Membrana hyothyreoidea
Cornu superius cartilaginis thyreoideae
M aryepiglotticus
Cartilago corniculata (Santorini)
M arytaenoideus obliquus
M arytaenoideus transversus
Processus muscularis cartilaginis arytaenoideae
Lamina cartilaginis cricoideae
Cornu inferius cartilaginis thyreoideae
M cricoarytaenoideus posterior
Trachea (paries membranaceus)

Fig 13 Note that the musculus aryepiglotticus is an offshoot of the interarytenoideus muscle

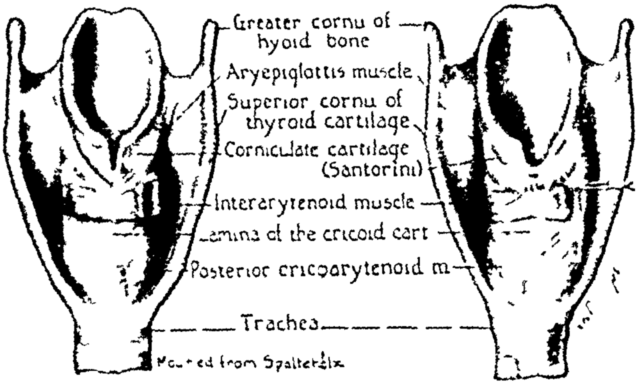

Greater cornu of hyoid bone
Aryepiglottis muscle
Superior cornu of thyroid cartilage
Corniculate cartilage (Santorini)
Interarytenoid muscle
Lamina of the cricoid cart
Posterior cricoarytenoid m
Trachea
Modified from Spalteholz

Fig 14 Severing the interarytenoideus muscle and fascia and anchoring the arytenoid temporarily to the thyroid cartilage

the muscle, the other for displacing the cartilage outward. If difficulty is encountered in this maneuver, one suture can be used for both purposes.

The cut fibers of the inferior constrictor of the pharynx are then sutured. This leaves the omohyoid passing through an aperture in the inferior constrictor. The platysma is closed with two or three interrupted catgut sutures and the skin with clips.

Experience has shown that it is best to operate on only one side if a good result is secured. If insufficient airway still exists, the other side should be operated on.

In the early group of cases an attempt was made to pass sutures through the arytenoid cartilage. In older patients the cartilage is frequently ossified and fractures easily upon efforts to pass a needle through it. It was found easier and better to pass the needle around the cartilage, hugging it closely, so as to avoid entering the larynx. If a small skin hook is first placed around the midportion of the cartilage, it will greatly facilitate surrounding it with a suture. If one is a right-handed operator, it will be found easier to operate on the left side, as the passage of the suture around the arytenoid cartilage must be done from the midline outward.

OPERATIVE RESULTS

As stated earlier, the omohyoid has been transposed in 27 of the 28 patients operated on. In the instance in which it was not transposed, a better than average airway was secured, also a voice of almost average volume. However, neither the voice nor the airway equalled the best results obtained.

In 2 patients the lower half of the arytenoid cartilage was removed because of fractures of the cartilage. In both instances a good airway and good voice were obtained, though not quite up to average.

All but two, or 26, of the patients can bring the vocal cords into apposition during phonation efforts. A careful study of the cases brought about the surprising observation that while the patients can both open and close the cords, the larger range of motion develops in the unoperated cord. Frequently, the unoperated cord will pass beyond the midline during phonation efforts to contact the displaced cord. As well as I can determine, this motion is the result of the tensor action of the cricothyroid muscles. The action of those muscles is to increase the anteroposterior diameter of the larynx. This results in the vocal bands being drawn toward the midline.

In two instances the cords were so widely separated that poor approximation of the cords has resulted. Air escape is so rapid that less vibration ensues, and the voices of these patients are weak. However, one of them is a trained nurse and has been doing special duty nursing for more than one year.

Postoperative results may be summarized according to several different criteria: the production of adequate airway, the ability to be rid of the tracheotomy tube, vocal capacity, and the ability to work. The voice might be graded on the degree of strength. Of the 28 patients operated upon, 23 have adequate airway and the tube has been removed. In 25 there is a fair to good voice. All 28 can engage in conversations over the telephone. It is believed that with the knowledge gained from this experience better results will be secured in the future.

Several of the patients are employed, one as a dancing teacher. Two men only have been operated upon. One is a "trouble shooter" in a large telephone exchange; the other is a hardware merchant. Both get along well in their respective occupations. A majority of the others are housewives who are doing all their own housework. About half of them had been wearing permanent tracheotomy tubes from six months to fourteen years. The paralyses had been present from nine months to twenty-one years. All but two followed thyroidectomy; these two followed infections.

In no group of patients that I have encountered have gratitude and appre[illegible] for relief approached the feelings of [illegible] patients.

No one should attempt this o[illegible] without first gaining a thorough knowledge of the anatomy and physiology of the larynx, plus a knowledge of the anatomy and physiology of all neighboring muscles and structures. After that is acquired, the technic should be practiced on unembalmed cadavers. Embalmed cadavers are useless.

SUMMARY

The author describes in detail a new operation for the relief of obstructed dyspnea in patients affected with paralysis of both vocal cords.

The pathology of the larynx following paralysis of the recurrent laryngeal nerves is the same as in paralysis of any peripheral motor nerve—flaccid paralysis, atrophy, fibrosis, contractures. A plea is made for earlier, elective tracheotomy.

Favorable results are reported in a series of 28 patients operated upon by the new technic.

RÉSUMÉ

Une nouvelle opération qui ramène la fonction dans la paralysie bilaterale de l'adducteur des cordes

L'auteur décrit en détail une nouvelle opération pour le soulagement de la dyspnée obstructive dans les malades avec paralysie des deux cordes vocales.

La pathologie du larynx qui suit la paralysie des nerfs laringéales récurrents est la même de chaque paralysie de quelque soit nerf moteur-paralysie flaccide, atrophie, fibrose, contractures. Précoce élective tracheotomie est conseillée.

Des résultats favorables sont reportés dans une série de 28 malades opérés avec la nouvelle technique.

ZUSAMMENFASSUNG

Eine neue, Funktion-wiederherstellende Operation bei bilateraler Abductor Cord Paralyse

Der Autor beschreibt genau eine neue Operation zur Behebung von obstruktions Dyspnoe, bei Patienten welche an Paralyse beider Stimmbänder leiden.

Die Pathologie des Larynx, welche auf Paralyse des Nervus recurrens folgt ist die gleiche, als die bei Paralyse irgend eines peripheren motorischen Nerven.—schlaffe Lähmung, Atrophie, Fibrosis, Kontrakturen. Frühzeitige Tracheotomie wird vorgeschlagen.

Es wird über günstige Erfolge in einer Serie von 28 Patienten berichtet, welche mit der neuen Technik operiert wurden.

SUMARIO

Una nueva técnica operatoria para restaurar la función despues de la parálisis bilateral de los abductores de las cuerdas vocales

El autor describe en detalle una nueva técnica operatoria para aliviar la disnea obstructiva en pacientes afectados de una parálisis de ambas cuerdas vocales.

El estado patológico de la laringe, que sigue a una parálisis de los nervios recurrentes laringeos es el mismo que se presenta en cualquier parálisis de un nervio periférico motor (parálisis flácida, atrofia, fibrosis, contracturas). La operación consiste en una temprana traqueotomía.

Favorables resultados son reportados en una serie de 28 pacientes quienes fueron operados con la nueva técnica.

RIASSUNTO

Una nuova operazione che ristora la funzione nella paralisi bilaterale dell'adduttore delle corde

L'A. descrive in dettaglio una nuova operazione per il sollievo della dispnea da ostruzione in pazienti affetti da paralisi di ambedue le corde vocali.

La patologia del laringe che segue la paralisi dei nervi laringei ricorrenti è la stessa di ogni paralisi di qualsiasi nervo motore-paralisi flaccida, atrofia, fibrosi, contratture. Viene consigliata precoce elettiva tracheotomia.

Risultati favorevoli sono riportati in una serie di 28 pazienti operati con la nuova tecnica.

The Toxemias and the Thyroid Gland

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NEW YORK CITY

THE day of the specialist is still with us, and rightly so, for it is proper that the treatment of certain diseases and parts of the body be guided by those who have carefully studied them in minute detail. But—and in this lies the essence of the scientific approach—it must always be remembered that there is no such thing as kidney disease, or gallbladder disease or disease of the thyroid gland per se. There *is* disease. Those pathologic conditions that affect certain organs of the body, do not, as a rule, limit themselves to circumscribed spheres, except in the earliest stages. They ultimately affect the body as a whole. Indeed, the actual cause of the pathologic state may lie at a point far removed from the organ that evidences the abnormal condition.

Again and again in my experience I have removed lumps from the breast, not by any operation on the mammary gland, but by relieving certain conditions in the pelvic or abdominal cavity. Today psychiatrists are leaning more and more to the belief that I have been preaching for many years, that somatic factors are often the cause of mental illness, and that relief of pathology in the body may cure what was deemed to be a disease of the brain. Likewise, mental states or emotional imbalance may have a definite effect on the body as a whole.

It is, then, of the greatest importance, and cannot be too strongly stressed, that while specialists are necessary, it is indispensable that they think of their patients as a dynamic mechanism, each part absolutely essential, each relying on and affecting the other and integrating into a whole.

TOXIC GOITER AND ITS CAUSES

In my experience with pathologic conditions of the thyroid gland there have been innumerable instances in which pathology at a distant point has resulted in a toxic goiter. Intestinal toxemia has taken its toll of many a thyroid gland that could have been saved. It is of considerable interest to recall that back in 1779 Wilmer, a surgeon of Coventry, England, demonstrated the relationship between stasis of the intestine and goiter. He cited two cases of goiter which were cured by "certain measures." In one of the cases he prescribed "a medicine composed of millepedes, burnt sponge, and cinnabar of antimony." But without fail the patients were to be "purged at intervals with mercurial cathartic pills." With this treatment he averred that the bronchocele (goiter) was cured in forty days. Undoubtedly the "purge" was at the bottom of the cure.

Many causes have been suggested for disturbances of the thyroid gland—unsanitary surroundings, deficient nutrition, infectious diseases, heredity or psychic conditions and, more recently, systemic poisoning. While such sources of infection may be located in different parts of the body, the sinuses, teeth, tonsils, cervix uteri, prostate and seminal vessels, and particularly the intestinal tract, are the most frequent. Many authorities on the thyroid gland believe that pathological conditions of the gland are, in many instances, definitely traceable to the intestinal tract. I concur in this opinion.

For many years it has been my contention that a goiter which diminishes in size with the disappearance of other symptoms, through surgical or therapeutic measures on the intestinal tract, or any other suspected source of infection, is undoubtedly due, largely if not entirely, to the absorption of that particular toxin. Since all glandular tissue, including the thyroid, is dependent upon its hematogenous environment for its proper reaction to the body as a whole, any poisoning over a period of time must of necessity show its ill effects. Toxic irritation in the blood affects the cells, causing a change in their environment; thus the activity of the gland may either be augmented or diminished, or the character of its secretion changed.

Hertoghe believed that the thyroid is the monitor of all the internal secretory glands and the first to react to poisoning or undue excitement. Fear and a disturbed emotional state may cause an immediate enlargement of the gland. I recall a young patient about twenty-two years old, rather highstrung, but otherwise perfectly normal, who went to Europe on a pleasure trip. While on the Riviera she was in an automobile collision. Although she did not sustain any physical injury, she became nervously disturbed and developed a spontaneous goiter, with exophthalmos and tachycardia. It took several years after she was brought home before the goiter reduced in size and the accompanying conditions cleared up. Another such case was that of a seaman in the first World War who fell overboard and nearly drowned. He developed such a large goiter, with marked general symptoms, that he had to be discharged from the naval service.

In 1914 I referred to enlargement of the thyroid gland resulting from toxic poisoning at other sites of the body as "systemic goiter." Often in these cases the thyroid is not enlarged, but the classical symptoms are present—hyperthyroidism or dysthyroidism, increased or perverted thyroid secretion. Of course, systemic goiter must be differentiated from simple goiter, for in the latter instance, no matter how enlarged the gland, there is an absence of thyreotoxic symptoms. It must be remembered also that the size of the thyroid gland is not of real importance; it is the activity that is the greater factor. I have seen cases of an abnormally small gland which oversecreted and caused marked symptoms. We must not permit the size of the thyroid gland to confuse us. At times it is almost a misnomer to use the term "goiter," for that suggests enlargement of the gland as a result of oversecretion, whereas in cretins, for instance, though the gland is abnormally small, there have been innumerable instances of tumors of the thyroid. There are cases of hypothyroidism with a gland sufficiently enlarged to cause pressure symptoms that complicate the picture.

Many years ago my teacher, Theodore Kocher of Berne, attended a meeting on the thyroid gland in London. The diminutive, modest man, who was introduced as the one who knew "more about the thyroid gland than any other living person," quietly said: "I do not know much about the thyroid gland or about the poisoning of the system through the hypersecretion of the gland, but I do know that a little man can have a great diarrhea and a big man may have marked constipation. Likewise a small thyroid gland can be a menace to the entire body and upset the whole glandular system."

Frequently, in cases of intestinal toxemia uncomplicated by other conditions, the thyroid gland wastes to such a degree that it is hardly perceptible to the finger. It is this reduction in the gland that results in many symptoms exhibited by patients with chronic intestinal toxemia. Poisons in the blood may cause irritation, followed by glandular hypersecretion, then hypertrophy, and finally by atrophy and limited function. As a gland, the thyroid needs the proper material in order to provide proper secretion, in quality and quantity, for its normal demands as related to the entire body. Unless all sources of infection are eliminated as far as possible, therapy to the thyroid will be handicapped and largely ineffective.

THERAPY

There are mild types of thyroidism which become completely normal when all toxic foci are cleared up; i.e., the atrophic thyroid with small isthmus may augment its size and increase its function; or if hypertrophic, it may begin to function normally. Operation upon the alimentary tract for an acute or subacute abdominal condition has often cured a case of hyperthyroidism. However, there are certain cases where the atrophic condition of the thyroid is such that the relief of the toxic situation alone is not sufficient. Thyroid therapy must then be instituted and, in some cases, continued indefinitely. Of course, in many cases where a goiter is present and demands surgical interference, it is also necessary to remedy other conditions before the cure can be complete.

Marked thyroidism, with a large or small gland, often demands either ligation or some form of thyroidectomy. This is true when the system is thoroughly poisoned with thyroid toxins. In such cases a period of preparation for operation is essential, and an understanding of the drawbacks of a complicating focus of infection elsewhere in the body, or of intestinal toxemia, will be helpful to the surgeon as well as of great advantage to the patient. The prognosis in such cases depends to a large extent upon the duration of the toxic symptoms.

In women, during puberty, throughout gestation and during the climacteric, a state of hyperthyroidism, often without obvious goiter, may exist. If no marked demands are made upon the gland by the absorption of toxins from foci of infection in other parts of the body, the hyperthyroid condition usually clears up when the aforementioned periods pass. But if care is not exercised, the hyperthyroidism may be prolonged and the gland be permanently affected.

The writer wishes again to stress the fact that in systemic goiter one must be on the lookout for such conditions as adenoids, chronic tonsillitis, sinusitis, pyorrhea, dental abscesses or caries, cervical adenitis, otitis media, infections from chronic appendix or gallbladder, pyelitis, vaginitis, salpingitis, pelvic abscess, pelvic peritonitis, colitis, and other gastrointestinal pathology which may be a prime factor in the condition under consideration.

In conclusion, it must be emphasized that this paper deals with thyroid conditions due to somatic factors that must be corrected, with or without operation on the gland itself, before cure can be hoped for. In over 3,000 of my cases the essential treatment was ligation or thyroidectomy, or both. However, I have also had a large number of patients (see the following case histories) where the primary or aggravating cause of the thyroid pathology lay in toxic infection from other parts of the body.

CASE REPORTS

Case 1.—T. M., female, 36 years, married, two children, consulted me June, 1917, complaining of hemorrhage from the bowels, blood-stained vomiting and fainting spells. Eleven years previously a gastroenterostomy had been performed, by another surgeon, for duodenal ulcer. I found the patient emaciated, her breasts small, her thyroid gland atrophic. Abdominal examination elicited distinct tenderness over the head of the colon in the appendix region. I advised operation, which I performed July 3, 1917. Massive adhesions bound the gallbladder and transverse colon, the omentum was adherent to the old abdominal scar; there was a broad ileopelvic band. The conditions were relieved, and the patient gradually improved under digestives and intestinal antiseptics. Breast tissue and thyroid gland slowly became more normal in size. The patient has been and is now in excellent health.

Case 2.—C. W., a male, 47 years, married, one child, consulted me February, 1921, complaining of great difficulty in swallowing. Five weeks previously he had noticed a lump, the size of an orange, in the neck. There were also cardiac symptoms and marked tremor. I operated February 27, 1921, removing the right half of the thyroid gland with isthmus. Microscopic examination showed marked vascular [illegible] mul-

de la glándula puede aumentar o disminuir o los caracteres de su secreción cambiar.

Una de las muchas causas de la patología del tiroides es la toxemia crónica intestinal.

Un bocio que disminuye de tamaño y que los síntomas desaparecen despues de un tratamiento médico del tracto intestinal o quirúrgico de un foco de infección es sin duda debido a que se eliminó la absorción de toxinas.

El bocio simple puede ser diferenciado del bocio sistemático, porque en los antecedentes se presenta el crecimiento de la glándula sin ningún síntoma tirotóxico. Es la actividad y no el tamaño de la glándula lo que se tomará en consideración para diferenciarlos.

Son citados, casos ilustrativos en los cuales los factores somáticos mejoraron, con o sin operación de la glándula tiroides.

RIASSUNTO

Le tossiemie e la ghiandola tiroide

Alcune condizioni della ghiandola tiroide sono dovute a foci di infezione in punti distanti. Irritazione tossica nel sangue colpisce le cellule; così l'attività della ghiandola può essere aumentata o diminuita o il carattere della secrezione cambiato.

Una delle molte cause di patologia tiroidea è la tossiemia da disturbi intestinali cronici. Un gozzo, il cui volume diminuisce, e i cui sintomi concomitanti spariscono dopo misure chirurgiche o terapeutiche sul canale intestinale o altre sospette sorgenti di infezione, è senza dubbio curato dall'assorbimento di quella particolare tossina.

Il gozzo semplice deve essere differenziato dal gozzo sistemico perchè nel primo, per quanto ingrandita sia la ghiandola, ci possono essere molto pochi o nessun sintomo tireotossico. È l'attività e non il volume della ghiandola che deve essere preso in considerazione.

Casi illustrativi sono citati nei quali la scomparsa del fattore somatico, con o senza operazione sulla ghiandola tiroide stessa, guarì il disturbo.

INTERNATIONAL ASSEMBLY

Associate Members, Members and Fellows desiring to present papers at the International Assembly of the International College of Surgeons to be held in Mexico City, Mexico, from August 10 to 14, 1941, will please communicate at once with Dr. Desiderio Román, 250 South 17th Street, Philadelphia, Pennsylvania, Chairman of the Program Committee for the United States.

Recurrent Hyperthyroidism

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HAMILTON, ONTARIO, CANADA

WE will assume that hyperthyroidism is eventually a surgical disease, and that the surgeon is asked three specific questions by the patient. What is the risk of my operation? What are the chances of my goiter coming back? What is this operation going to cost?

The last question is almost entirely a social problem, but to quote Bowers,[1] it is a grave mistake to belittle or neglect the aspect of freedom from worry in the treatment of the toxic goiter patient. We have noticed that patients freed from financial worry, as by an insurance plan, undoubtedly do much better. The first question has been answered by many individuals and groups throughout this continent who have been operating upon thyroids with a risk of less than 1 per cent.

The second question is all-important to the patient. Are his symptoms coming back? Is he going to be able to work? He does not know what is meant by recurrent hyperthyroidism, but his whole physical and economic future is involved in this very pertinent query. The question is, therefore, a real problem for the clinician or surgeon, and it is with this in view that we shall discuss the possibilities of an accurate prognosis of the thyrotoxic case.

REMAINING TISSUE

Theoretically, nodular toxic goiters should not recur, provided all the adenomatous tissue has been removed. In reoperating upon our own cases and those done by other surgeons, we have found that some adenomatous tissue has been overlooked. One of the most interesting cases of this kind was a patient upon whom we had done a bilateral thyroidectomy for nodular toxic goiter. Both sides were substernal and degenerated. A radical operation was done. No fluoroscopic examination was made of the chest at the time. Within a year the patient returned to us with shortness of breath and symptoms of hyperthyroidism.

We thought it was impossible for us to have missed any gland, and in the clinical examination found her right chest dull. A roentgenogram showed the pleural cavity to contain fluid. When this was withdrawn, further plates showed the presence of a tumor of the mediastinum. The basal rate being still elevated, a diagnosis of aberrant thyroid was made. The chest was opened (E.C.J.) and a thyroid the size of a large grapefruit was removed. This had no apparent blood supply. Its removal, however, cleared up all the patient's symptoms.

One should always consider, in the return of hyperthyroid symptoms in nodular toxic goiter, the possible presence of these aberrant thyroids, which have in some way cut themselves off from the main gland. The error in this case could have been avoided by fluoroscopic examination of the chest.

In the last few years we have been doing practically total thyroidectomies in nodular toxic goiter, and have seen only an occasional return of symptoms. In considering this whole problem, one must keep in mind the return of symptoms of heart damage, and differentiate them from symptoms of true hyperthyroidism.

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*Department of Surgery, McGregor Clinic

REGIONAL FACTORS

We believe that recurrent hyperthyroidism is regional, and that its incidence has something to do with the severity of the disease. Thompson and Means (1932), in a comparison of Boston and Chicago, found no difference in these cities in the severity of the disease, as based upon the rate of reduction of metabolism under iodine. However, we believe, from personal communications and personal talks with members of the American Association for the Study of Goiter, that in the Niagara Peninsula we see a larger percentage of severe cases of diffuse toxic goiter than is seen in some of the other goitrous belts. Basal rates of +75 and over are not uncommon. We see preoperative crises every year. Postoperative recurrences in members of this group under our care amount to 15 per cent. This is a much higher recurrence rate than reported by many of our friends, whom we have had the opportunity of seeing operate, many of them doing a less radical operation than we attempt.

In some nongoitrous districts, such as New Orleans, severe hyperthyroidism with crises, especially in the Negro race, has been observed by Rives.[2] In a recent questionnaire relative to storms or crises, we find that there is a close relationship between the number of recurrences and the number of crises or storms seen since the advent of iodine therapy. Plummer (1931) believed that the severity of the disease in certain localities ran in cycles, and followed severe outbreaks of influenza.

OTHER FACTORS IN RECURRENCE

Seeking other factors bearing upon recurrences, we agree with Goetsch[3] that failure to remove adequate amounts of hyperplastic tissue and neglect to remove the pyramidal lobe may be the most common reasons for recurrence, but that this is not invariably true. Goetsch believes that some of these recurrences are based upon original cause or "urge." We believe this is another way of expressing what Warthin talked about in his "Graves' constitution."

We have suggested elsewhere[4] that there is a group of adolescents with diffuse toxic goiter showing certain characteristics which make them subject to storms during their surgical treatment and also liable to recurrence. In reviewing microscopic slides from recurrent cases, we have found only one during the last three years which did not show the large degree of lymphocytic infiltration referred to by Warthin. Diffuse toxic goiter cases which show no benefit from iodine, nor any palpable change in the feeling of the thyroid gland (sometimes called the iodine-resistant group), should be put down not only as decided operative risks, but also as potentially recurrent cases.

Means[5] warned us against being dogmatic in thyroid matters. He also suggested that it is impossible for the clinician to state preoperatively what is going to be found on the microscopic slide. Generally speaking, a diagnosis of nodular toxic goiter can usually be made, and the prognosis also, in so far as recurrence of hyperthyroid symptoms is concerned. This is true, provided a total thyroidectomy is planned. If, then, we get our recurrences in diffuse toxic goiter only, each individual must be judged separately. Graves' constitution, in our minds, is a real entity. Radical operations diminish the percentage of recurrences; nevertheless, if recognized, severe hyperthyroidism with high basal metabolic rates, particularly in the adolescent group, will enable us to caution the patient of the possibility of future trouble. If at the time of operation the sections show a large amount of lymphocytic infiltration, we believe that one must suggest the probability of recurrence.

THERAPY

The symptoms of recurrence run all the way from a mild degree of tachycardia and tremor to the fulminating type, in which all symptoms are worse than before operation and the gland is larger. Cases of the latter type are cited by Crotti[6] and others. In the mild cases, small doses of iodine may keep the patient under control, and this may be necessary for the remainder of the patient's life. Secondary operations should be left until all other methods have been tried.

We make a practice of advising radiation of the thyroid gland as a preliminary measure, as this treatment seems to have a marked effect upon recurring types. This again may have something to do with a large amount of lymphoid tissue in the gland. We have also recently been using radiation therapy over the pituitary and over the suprarenal, as suggested by Hutton and Madden,[7] and according to their technic, viz.: 120 kv., 2 mm. aluminum filter, 50 cm. skin target distance, 3 ma., 5 min., delivering 50 r units. The pituitary is treated through a portal 10 by 10 cm. and the adrenals through a common portal 15 by 15 cm. Both glands are treated on the same day. In our limited experience this additional measure has had favorable results. We have deviated from the suggestion of Hutton and Madden by treating one gland at a time in order to ascertain which gland, if any, plays the greater part in the apparent result. We have come to no conclusion.

Iodine, of course, is used in all recurrent cases in small doses, and we agree with Jackson that many of the mild hyperthyroid cases or recurrences can be kept under control by this measure over a period of years. The brilliant efforts of Crile in attacking persistent hyperthyroidism through the sympathetic ganglia are worthy of the greatest consideration. The reason why many others have not been able to concur in his conclusions is in a measure due to the technical difficulties of the operation.

SUMMARY

Theoretically, nodular toxic goiters should not recur following operation, provided that practically total thyroidectomies were done. Nevertheless, at least 25 per cent of the author's cases of diffuse toxic hyperthyroidism have shown some signs of recurrence. The greater the urge from without the thyroid, the more chance there is of a recurrence; in other words, polyglandular types recur in spite of complete operation. The author believes that recurrent hyperthyroidism is regional, as is the severity of the disease.

Recurrences are treated by iodine, which may be necessary for the remainder of the patient's life. Secondary operations should be left until all other methods have been tried. Radiation of the thyroid gland is always used as a preliminary measure, and radiation of the suprarenals and pituitary has been recently used with satisfactory results.

REFERENCES

1 Bowers, Ralph F Tr Am. A. Study Goiter, 1939.
2 Rives, James D · Personal communication.
3 Goetsch, Arthur Am J. Surg (Sept), 1940
4 McGregor, J K · Tr. Am. A. Study Goiter, 1940
5 Means, J H · Thyroid and Its Diseases, Philadelphia, J. B Lippincott Company
6 Crotti, Andre Thyroid and Thymus, Philadelphia, Lea and Febiger, 1938
7 Hutton, James H , and Madden, E E. Tr Am A. Study Goiter, 1936, pp 199, 201.

RÉSUMÉ

Hyperthyroïdisme recurrent

Theoreticamment les goitres nodulaires toxiques ne devraient pas rétourner après l'opération pourvu que thyreodectomies praticamment totales soient faites. Cependant au moins 25% des cas de hyperthyroïdisme toxique diffus de l'auteur démontrèrent quelques signes de rétour. Autant plus grand le stimulus du dehors de la thyroide, autant plus grande est la possibilité de rétour; en d'autres mots les types pluriglandulaires rétournent malgré les opérations completes. L'auteur croit que l'hyperthyroïdisme récidivant est régional comme est la sévérité de la maladie.

Les récidives sont traités avec le iode, qui peut être necessaire pour tout le [illegible]

de la vie du malade. Opérations sécondaires devraient être *laissées jusqu'à que d'autres* méthodes n'aient pas étés prouvés. Irradiations de la thyroïde sont toujours employées comme un moyen préliminaire et irradiations des surrénales et de la pituitaire ont étées récemment employées avec de résultats satisfaisants.

ZUSAMMENFASSUNG

Rezidivierender Hyperthyreoidismus

Theoretisch sollte knotiger, toxischer Kropf, nach einer Operation nicht rückfällig werden, vorausgesetzt dass eine nahezu totale Thyreoidectomie vorgenommen wurde. Nichtsdestoweniger haben mindestens 25 Fälle des Autors, von diffusen toxischen Hyperthyreoidismus, Rezidive irgendwelcher Art gezeigt. Je grösser der Drang von ausserhalb der Schilddrüse, desto grösser ist die Möglichkeit eines Rezidiv; in anderen Worten, es werden die polyglandulären Typen, trotz radikaler Operation rückfällig. Der Autor ist der Ansicht, dass rezidivierender Kropf, ebenso wie die Schwere der Erkrankung, von der Gegend in welcher der Patient lebt, abhängig ist.

Rezidive werden mit Jod behandelt, welches zeitlebens für den Patienten nötig sein kann. Sekundäre Operationen sollen nur vorgenommen werden, nachdem alle anderen Methoden versucht worden sind. Bestrahlung der Schilddrüse wird immer als erste Massnahme vorgenommen und kürzlich wurden auch Bestrahlungen von Nebenniere und Pituitaria mit gutem Erfolge durchgeführt.

SUMARIO

El hipertiroidismo recurrente

En un teórico análisis del bocio nodular tóxico, éste no repetirá despues de la extirpación de la totalidad de la glándula tiroides. Sin embargo, el 25 por ciento de los casos que el autor reporta de hipertiroidismo tóxico difuso han presentado algunos signos. Los tipos poliglandulares repiten a pesar de una completa operación. El autor cree que esto es debido a la severidad de la enfermedad.

Las recurrencias serán tratadas con yodo y se usará todo el tiempo que el paciente lo requiera. Operaciones secundarias serán utilizadas despues de haber intentado otros métodos. La radiación de la glándula tiroides es seimpre usada como una preliminar mediada. La radiación de las suprarenales y de la pituitaria ha sido utilizada recientemente con resultados satisfactorios.

RIASSUNTO

Ipertiroidismo ricorrente

Teoreticamente gozzi tossici nodulari non dovrebbero ritornare dopo l'operazione purchè siano fatte tireodectomie praticamente totali. Ciò nonostante almeno 25% dei casi di ipertiroidismo tossico diffuso dell'A. dimostrarono alcuni segni di recidiva. Tanto maggiore lo stimolo dal di fuori della tiroide, tanto maggiore è la possibilita di recidiva; in altre parole i tipi pluriglandolari recidivano a dispetto di operazioni complete. L'A. crede che l'ipertiroidismo recidivante è regionale, come è la severità della malattia.

Le recidive sono trattate con iodio, che può essere necessario per tutto il resto della vita del paziente. Operazioni secondarie dovrebbero essere lasciate fino a che altri metodi non sono stati provati.

Irradiazioni della tiroide sono sempre usate come un mezzo preliminare, e irradiazioni delle surrenali e dell'ipofisi sono state usate recentemente con risultati soddisfacenti.

The Problem of Thyroidectomy Drainage

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THE question of whether or not to employ drainage after thyroidectomy will cause much debate in almost any surgical meeting. In the past all thyroidectomies were drained; but with the advent of improved technic and nonabsorbable suture material, the question has entered the controversial field. Theodore Kocher,[1] the father of goiter surgery, drained all large amount of serum which made drainage obligatory.

The first American surgeon to drain through the wound was C. H. Mayo.[2] Some surgeons, notably Coller and Boyden,[3] drain from the ends of the incision. These wounds drained about fifteen days, making it necessary for the patient to stay in the hospital some sixteen or more days.

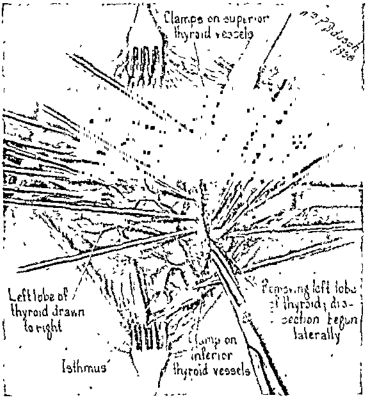
Clamps on superior thyroid vessels
Left lobe of thyroid drawn to right
Isthmus
Clamp on inferior thyroid vessels
Removing left lobe of thyroid; dissection begun laterally

Fig. 1. Dissection of the lobe to show proper size of the thyroid remnant that is to be left *in situ*

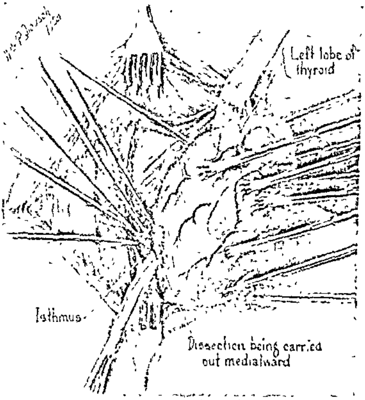

Fig. 2 Dissection of the lobe from the trachea, showing remnant of the gland left along the trachea.

wounds. Therefore, practically all early American surgeons did likewise, except Halsted and his pupils. The drainage of the thyroid wound was almost a necessity in the past, because heavy catgut was used to secure hemostasis. This catgut caused an extensive exudative response, resulting in a

SUTURE MATERIALS

The trend toward nondrainage probably started with Halsted,[4] who used fine silk suture material and the transfixion method for the absolute control of hemorrhage. Since Halsted, Whipple[5] has become one of the chief proponents of [illegible] cases. He has listed the error in the use of silk (the same being true for cotton). These errors are:

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*Of the Guthrie Clinic and Robert Packer Hospital

1. Tight sutures.
2. Mass ligatures.
3. Blunt scissor dissection.
4. Careless hemostasis.

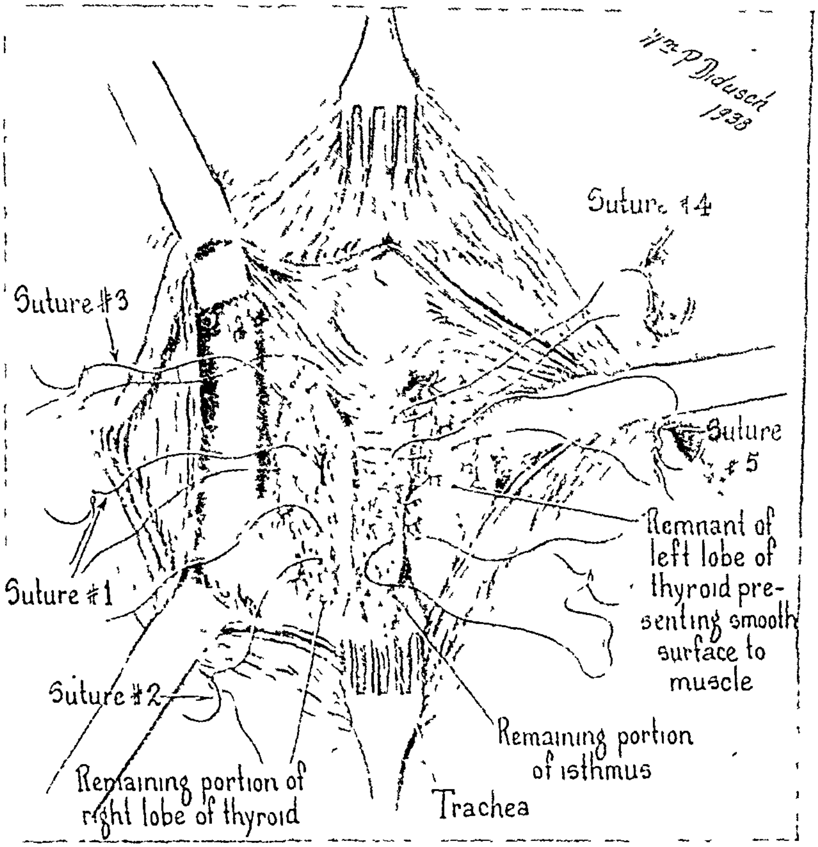

Wm P Didusch 1933
Suture #4
Suture #3
Suture #5
Remnant of left lobe of thyroid presenting smooth surface to muscle
Suture #1
Suture #2
Remaining portion of isthmus
Remaining portion of right lobe of thyroid
Trachea

Fig 3. Method of controlling hemorrhage from the remnant by two rows of interrupted fine silk sutures placed at different levels in the long axis of the neck. Interrupted sutures are placed through the edges of the remnant and the fascia and thyroid tissue of the trachea, inverting the outer surface of the remnant to conceal its incised surface.

5. Use of any but the finest grade of silk.
6. Combination of silk and catgut.
7. Use of silk in any but a sterile field.
8. Continuous sutures.

In 1940 Meade and Ochsner[9] reported on the relative value of catgut, silk, linen and cotton as suture materials. They did their experimental work on the tissues of the abdominal wall of rabbits. The tissue reaction was observed on the fifth, eighth, tenth and thirteenth days after these sutures were imbedded. The materials were graded according to the amount and persistence of leukocytic infiltration, the appearance of fibroblasts, amount of serum and fibrin and the length of time necessary to produce final healing. On this basis cotton, which produced the least reaction and earliest healing, was graded 1, silk 2, linen 3 and catgut 4. Cotton shows much less tendency to tissue ingrowth and is therefore less likely to cause sinuses in the presence of infection.

TECHNIC

A few of the high points in the technic of subtotal thyroidectomy which aid in the securing of hemostasis will be mentioned.

The preparation of the remnant, as shown in Figures 1 and 2, is done routinely in the Robert Packer Hospital. This is followed by an outstanding improvement in technic originated by Lahey.[7] He ligates all the vessels in the remnant and then rotates the remnant toward the trachea to which it is sutured. This buttresses the cut and oozing surface of the gland against the trachea and controls all oozing and bleeding (see Fig. 3). With the employment of this technic he has been able to close most of his subtotal thyroidectomies for exophthalmic goiter without drainage. He also stated that it has been definitely established in his clinic that postoperative reaction storms are not related to drainage or nondrainage after subtotal thyroidectomy, provided the wound is left dry. The method of suturing the sternothyroid muscle to the lower margin of the remnant, and in turn together, as an additional aid in securing complete hemostasis (see Fig. 4).

DeCourcy,[8] in 1932, found it necessary to drain only 12 in a series of 1,200 cases, or 1 per cent. Guthrie and Sharer,[9] in 1935, reported that they were able to close 62 per cent of their wounds without drainage by using a technic modified by the use of fine silk and very fine catgut as a running lock suture of the remnant to control oozing. Guthrie and Brown,[10] in 1938, stated that they were able to dispense almost entirely with drainage by using very fine silk or cotton and by adopting Lahey's suggestion of suturing the remnant to the trachea.

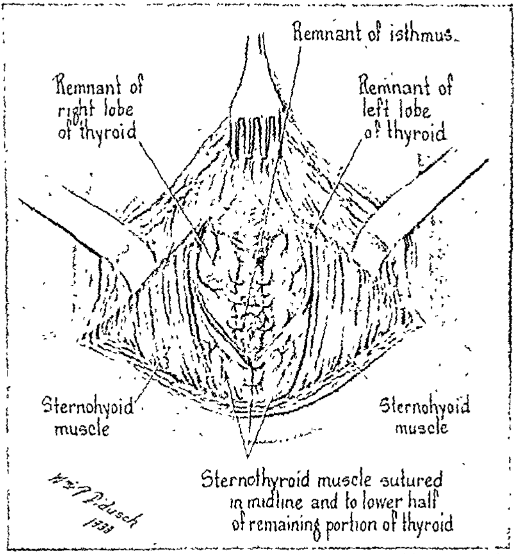

Remnant of isthmus.
Remnant of right lobe of thyroid
Remnant of left lobe of thyroid
Sternohyoid muscle
Sternohyoid muscle
Sternothyroid muscle sutured in midline and to lower half of remaining portion of thyroid
W. P. Didusch 1939

Fig. 4 Sternothyroid muscles are sutured at the midline and to the lower portion of the remnant

Many surgeons fear mediastinitis following the removal of substernal or intrathocuboidal type not associated with hyperfunction. Some sections showed extensive destruction and replacement fibrosis. In no place did they show definite epithelial hyperplasia of the type associated with hyperthyroidism.

"The remaining five of the patients with colloid goiter gave histories of mild cardiac symptoms for years and then developed rather suddenly the symptoms of marked hyperthyroidism, the heart becoming rapid and irregular, and three showing evidence of congestive heart failure. These glands microscopically were somewhat similar to the preceding, except that they showed areas of definite hyperplasia with high columnar cells, some with papillary projections of epithelium into the acini of the glands. It seems rather reasonable to deduct that these glands were producing cardiac symptoms for years and the hyperplasia was of more recent development, producing the more recent marked toxic symptoms and precipitating the congestive heart failure.

"All thirty-five of these glands showed areas of abnormal staining reaction of the colloid as shown by Hertzler.

"The other fifteen were the fetal adenomas. Granting that the fetal adenoma is really a benign tumor of the thyroid and not a goiter, it does undergo hyperplasia, forms colloid areas and is subject to degenerative changes. It also produces symptoms of toxicity. They were chosen because of their late tendency to produce cardiac symptoms. They frequently are present for years, showing evidence of mild toxemia; and then in later life the symptom of cardiac irregularity develops. They were chosen also because the diseased tissue is definitely localized, the remainder of the gland often being normal; the diseased tissue can with certainty all be removed, and we may feel reasonably sure that the results obtained are due to such removal.

"All of the patients with fetal adenomas complained of cardiac symptoms. Six gave a definite history of early nervousness and rapid heart, with little or no weight loss. The remaining nine did not mention nervousness in the entrance complaint. All complained of dyspnea and ease of fatigue and most of them were aware of their cardiac irregularity. Three ran regular pulse rates of about 100. Four had extra systoles and eight had auricular fibrillation. On section all of these adenomas were found to be long past their period of active growth. All showed degenerative changes. In some the acini had completely disappeared in the center, being replaced by fibrous tissue. In others the acini were atrophic and fragmented, lying in a poorly staining material. As is usual in fetal adenomas, the least degeneration was shown around the periphery of the gland, but these epithelial cells here were of the low type, showing regressive rather than hyperfunctioning activity.

"It certainly seems reasonable to assume in this group of fetal adenomas that a degenerative process is responsible for the cardiac symptoms, especially so when the complete removal of the diseased tissue produces such remarkable improvement in the cardiac condition.

"From the foregoing study it seems reasonable to conclude that something besides hyperplasia and hypersecretion produces symptoms in goiter patients. It shows that they may have marked cardiac symptoms and yet the gland at removal may only show degeneration.

"The colloid in these glands showed the changes in the staining reaction of the colloid as described by Hertzler. This study shows that in the cases selected *some slow process has been affecting the heart over a period of years.*

"There is nothing yet definitely proved as to the role of degeneration in the production of the so-called goiter heart, but there is enough evidence to warrant further study of degenerative changes in the gland,

and perhaps the chemical changes in the colloid will be the answer."

MALIGNANCY

If anything needs to be added to the argument for surgical intervention, the incidence of malignancy might be cited. It varies from 1 to 3 per cent in different parts of the world. No one who has [illegible] the care of a patient with advanced carcinoma of the thyroid can help being impressed with the importance of [illegible] such a contingency.

One type of thyroid malignancy which offers a chance for cure, [illegible] from recurrence, should be [illegible] the papillary adenocarcinoma. [illegible] the gland itself may still be [illegible] that it cannot be palpated, yet a nodule appears in the neck and resembles a [illegible] gland. This "gland," when removed, shows under the microscope a picture which some have called "aberrant malignant thyroid," yet the same picture is found when a nodule in the lobe on the same side is examined. In these cases a complete lobectomy, including the closely surrounding structures and the isthmus, gives hope of long abatement, if not cure, of the condition.

As a final argument for surgical intervention, we might add that a fairly large number of nodular goiters become intrathoracic. These are the bane of the surgeon, and add considerably to the surgical risk. Andre Crotti once said that a man who looked for thrills in surgery should limit his work to the removal of intrathoracic goiters.

After the age of forty approximately 50 per cent of nodular goiters become toxic. That is, areas of hyperplasia occur, just as they do in the diffuse toxic goiter (exophthalmic goiter), whereupon we see the typical train of signs and symptoms—even though they be more moderate in degree. This, added to the already long-existent effect of a dysfunctioning gland, gives us the difficult case and the occasional death. As estimated by [illegible] per cent of the deaths from thyroidectomy occur in the advanced age group with nodular goiter of long-standing.

IODINE ADMINISTRATION

The preparation of these patients for surgery [illegible] joint problem for the physician and the surgeon. The surgeon should [illegible] as soon as operation [illegible] for it is he who must [illegible]. The physician should [illegible] responsibility for the [illegible] cardiovascular system and [illegible].

Iodine must never be given until the patient has [illegible] consented to thyroidectomy [illegible] the surgeon's most difficult [illegible] due to long-continued administration of iodine. It seems unfortunate that this should still have to be brought to the attention of the profession after many years of written and oral advice against the administration of iodine except as a preparation for surgery. No patient ever responds to its use so well as he does the first time. The economic factor involved in prolonged hospitalization should of itself be a deterrent. Certainly no importuning on the part of the patient should be allowed to warp the judgment of a physician.

REFERENCES

1. McGregor, J. R.: South. Surgeon 9:342-344 (May), 1940.
2. Hertzler, A. E.: Surgical Pathology of the Thyroid Gland. Philadelphia, J. B. Lippincott Company, 1926.
3. Chesky, V. E.: Tr. Am. A. Study Goiter, 1937, pp. 14.

SUMMARY

The so-called "nontoxic" nodular goiter is shown to be accompanied by changes in the colloid which have a slow, yet certain, deleterious effect upon the patient. The normal basal metabolic rate is practically to be ignored as an indication of the patient's condition.

The condition is definitely [illegible] one. The symptoms disapp [illegible]

mal values for low altitudes to persons who live in and are adapted to high altitudes.

Findings in the first ten cases which I studied were published in my *Tesis de México* in 1924.[8] This was admittedly a very limited number of cases, and no accurate conclusions could be drawn from them; the figures fluctuated between 56 and 62 vol. per cent, with an average of 59.4.

Mexico City is situated at 2,260 meters above sea level, with an average annual barometric pressure of 585 mm. to 10°. However, the results obtained are within the physiological limits set by other authors who have used the Van Slyke and Cullen method. Van Slyke, Stillman and Cullen have set 53-75 vol. per cent as the normal for adults, considering less than 50 vol. per cent as acidosis. In children, the normal values are 43-65 vol. per cent.

Later I increased the number of cases studied to 100, obtaining normal values which compare interestingly with those found at sea level. The values obtained were between 48.11 and 64.2, figures that have been commented on and discussed by Miranda[9] and Perrin.[10] Lately I have raised my study cases to 500, a number from which reliable conclusions can be drawn. The results of my investigations were presented to the Academy of Surgery,[4] the Academy of Science[5] and the Congress of Brussels.[6, 7, 8]

Almost all my observations were made on adults (about thirty years old) and on people adapted for at least two generations to life in the highlands. A few, however, were made on people who had been living for at least five years in the highlands, with the purpose of eliminating the factors involved in the process of adaptation.

The normal values for alkaline reserve gave an average of 59 vol. per cent, with oscillations between 50-64.3 vol. per cent, in 96 per cent of the cases; 48.1-49.7 vol. per cent in 2 per cent; and 68-71 vol. per cent in the other 2 per cent.

Perrin[10] published data that entirely agree with mine. Using the Marriot method, he found in normal individuals an average CO_2 tension in the alveoli of 30 mm. and a minimum of 25 mm., while the publications of other authors put the normal limits between 45 and 40 mm. According to the Marriot method, tensions of 35 to 30 mm. are considered as acidotic, and tensions of 20 mm. as extremely dangerous.

ALKALOSIS AND ACIDOSIS

In the study of the mechanism regulating the acid-base balance, it has been found that the C_H of the blood is directly proportional to the relation betwen the CO_2 in solution as H_2CO_3, and $NaHCO_3$, multiplied by a constant. Expressing this in chemical terms, it is the molecular relation $H_2CO_3/NaHCO_3$. This relation being 1:20, we can define acidosis and alkalosis according to this equation as the states in which the proportion of H_2CO_3 to $NaHCO_3$ is higher or lower than 1:20. This "CO_2-ratio" of Haggard and Henderson is also called the "true relation of the acid-base balance." For clinical purposes, the "buffer" action may be considered as based on this.

On the variations of this index is based the classification of acidosis and alkalosis as put forward by Haldane. When the denominator changes, the alkalosis or acidosis is called "non-gaseous," depending on whether it is decreased or increased. When the changes occur in the numerator, it is "gaseous alkalosis" or "hypercapnea" if it increases, and "gaseous acidosis" or "hypocapnea" if it decreases.

It is interesting to note that in "gaseous acidosis," there being a rise in the dissociation of H_2CO_3 and a rise in $NaHCO_3$ due to the excretion of acids or to a retention of alkalies by the kidneys, as well as a shift of the alkalies from the tissues to the blood, there is a state of acidosis with increased alkaline reserve which is called, for this transitory alkalosis which causes the low partial tension of CO_2 in the alveolar air, there being no alterations whatsoever in the 1:20 relationship mentioned above, since the diminution in the numerator is proportional to that in the denominator.

So, although it is true that the figures for alkaline reserve in high altitudes, as studied in the Valley of Mexico, are higher than those obtained at sea level, they do not indicate a state of acidosis, for the reasons already discussed. In the same manner there is a lowering of the alkaline reserve which does not indicate acidosis, and a rise in the same which does not mean alkalosis. This is explained by the mechanism discussed above.

This difference in normal values for aklaline reserve among people adapted to life in the highlands and in those adapted to life at sea level must be borne in mind whenever surgical treatment is contemplated on people living in high altitudes, as well as on persons traveling through the highlands but living at sea level, and vice versa. Otherwise serious errors may result from a mistaken belief that a normal person is in a state of acidosis or alkalosis (or vice versa).

SUMMARY

The CO_2 factor in the conditions of respiration in the Mexican highlands has been studied in an attempt to arrive at the normal values of the alkaline reserve in normal adults adapted to life in high altitudes. A thorough knowledge of the alkaline reserve is important in modern surgical practice; it is consequently important to know what changes take place in these normal values among people adapted to life in the highlands.

The normal values for the alkaline reserve in Mexico City, and in the whole Valley of Mexico, are much lower than those found at sea level, but they do not indicate acidosis, there exist diminutions of the alkaline reserve that do not mean acidosis and increases that do not mean alkalosis.

REFERENCES

1. Aguilar, Maximiliano. Reserva alcalina, Tesis de México, Facultad de Medicina de la Universidad de México, 1925.

2. Aguilar-Alvarez, José: Algunas anotaciones en el postoperatorio inmediato de los *gastrectomizados, Cir y cirujanos* (Oct.), 1933, pp. 123-133

3. Manzanilla, Manuel A · Estudio de acidosis, Tesis de México, Facultad de Medicina de la Universidad de México, 1924

4 Manzanilla, Manuel A Reserva alcalina en la ciudad de México, su importancia quirurgica, Cir y cirujanos (Oct), 1933 pp 149-161

[illegible] ntribucion al estudio de la [illegible] Iemorias y Revista de la [illegible] Antonio Alzate (Vol del [illegible]

[illegible] a respiration dans les hauts [illegible] VIIme Congres International des Accidents et des Maladies du Travail, Tome IV, Proces Verbaux et Discussions, Imprimerie Jean Vromans, Bruxelles, 1936, pp [illegible]

7 Manzanilla, Ma [illegible] auts plateaux, Cir y ciru [illegible]

8 *Manzanilla*, Ma [illegible] del trabajo, Artes Gráfic [illegible] 141.

9 Miranda, Frar [illegible] la respiración en el Valle [illegible] rnos circulatorios, Arch latino-am de cardiol y hemat, vol 2, 1931

10 Perrin, Tomás G : La investigación de la acidosis por la tensión del bioxido de carbono en el aire alveolar cifras normales *en la altiplanicie mexicana, Pasteur,* 4 347-348 (June), 1931

RÉSUMÉ

Élévées altitudes réserve alcaline et chirurgie

Le facteur de l'CO_2 sur les conditions de la respiration dans les pays montagneux du Mexico a été étudié pour essayer d'arriver aux valeurs normales de réserve alcaline dans les individus normaux adaptés à la vie dans élévées altitudes. Une profonde connaissance de la réserve alcaline est importante dans la pratique de la moderne chirurgie; pour ça ie est important de savoir quelles modifications ont lieu dans ces valeurs normales parmi les populations adaptées à la vie dans les pays montagneux.

Les valeurs normales pour la réserve alcaline en Mexico City et dans toute la vallée du Mexico sont beaucoup plus basses que celles trouvées au niveau de la mer, mais ils ne indiquent pas acidose; il existe une diminution de la réserve alcaline qui ne signifie pas acidose et un acroissement qui ne signifie pas alcalose.

ZUSAMMENFASSUNG

Hohenlage, Alkalireserve und Chirurgie

Um die normalen Werte der Alkalireserve, bei normalen Erwachsenen zu finden, welche an das Leben in grossen Höhenlagen angepasst sind, wurde die CO_2 Komponente bei der Atmung in Mexicanischen Hochländern Studiert. Bei der Ausübung moderner Chirurgie, ist eine gründliche Kenntnis der Alkalireserve wichtig, folglich istnes wichtig zu wissen, welche Veränderungen dieser normalen Werte bei Menschen stattfinden, welche an das Leben in grossen Hohenlagen angepasst sind. Die normalen Werte der Alkalireserve sind in Mexico City und in dem Valley of Mexico viel niederer als diese welche am Meerespiegel gefunden werden, doch weisen sie nicht auf Acidose hin; Es gibt eine Veringerung der Alkalireserve welche nicht Acidose und eine Zunahme welche nicht Alkalose bedeutet.

SUMARIO

La reserva alcalina en las grandes altitudes y su relación con la cirugía

Los factores de CO_2 en la respiración en las grandes altitudes mexicanas, han sido estudiados en un experimento llevado a cabo en los valores normales de la reserva alcalina en adultos normales adaptados a las grandes alturas. El conocimiento de la reserva alcalina es importante en la cirugía moderna; es interesante conocer que cambios toman lugar en los valores normales de las personas adaptadas a vivir in las altiplanicies. Los valores normales de la reserva alcalina en la Ciudad de Mexico y en el Valle de Mexico son mucho mas bajos que los encontrados al nivel del mar, pero no indican acidosis. Tambien se han encontrado aumentados sin que lleguen a la alcalosis.

RIASSUNTO

Altitudini elevate, riserva alcalina e chirurgia

Il fattore dell'CO_2 sulle condizioni respiratorie negli altipiani Messicani è stato studiato per tentare di arrivare ai normali valori di riserva alcalina in individui no

POST GRADUATE TEACHING FOR MEMBERS AND FELLOWS

Under the Auspices of the United States Chapter of the International College of Surgeons and Its Post Graduate Study Guilds

In performance of its educational program, the United States Chapter of the International College of Surgeons will initiate in October special courses of instruction in anatomy, both topographic and regional. This will cover surgical procedures, surgical anatomy and autopsy instruction, with special reference to macroscopic recognition of tissue changes and morbid anatomy; and will be supplemented with microscopic and histologic confirmation of macroscopic tissue changes in disease. These courses of instruction will be made of special interest through clinical demonstrations by surgeons, in coordination with the Credential privileges extended to members and affiliates of the Chapter.

The courses will be given by specialists, using adequate equipment and material, for the benefit of affiliates of the United States Chapter of the International College of Surgeons in Philadelphia, New York, Chicago, Toledo, Ohio, and at Creighton University, Omaha, Nebraska, where affiliates of the Nebraska Post Graduate Study Guild will be given excellent opportunities for basic instruction in surgery.

This is but the beginning of a far-reaching program of postgraduate instruction carrying out the aim of the United States Chapter of the International College of Surgeons, to afford ample facilities for the elevation of surgical performance and teaching of its affiliates and members.

Further announcements will be made in the Journal of the International College of Surgeons as to exact locations, dates and instructors.

Editorial

The Surgeon and Euthanasia

THE question of legalizing the practice of euthanasia by physicians in such cases as inoperable cancer is one of vital interest to the practicing physician and especially to the surgeon. In England the Euthanasia Society has enlisted the support of over a thousand of the most noted physicians, scientists, clergymen and laymen, and in this country a similar organization has acquired a noted sponsorship in the short space of three years.

This question cannot be put aside lightly. It affects all of us personally and professionally. There is much to be said both for and against the philosophy of merciful release from useless suffering, and it is well for the surgeon to give thought to it. On the one hand, it is argued that while death is inevitable, euthanasia is against the laws or God and man, even for the purpose of relieving unnecessary and futile suffering. Life is given to man by a higher power and only that power can end it, and will end it at the predestined time. Life is a sacred thing, so sacred that it must not be interfered with for any purpose or for any reason whatsoever. God gave life and only God can take it. This is the position of certain religious bodies, particularly the Catholic Church. These bodies maintain also that physical suffering, such as is involved in metastatic cancer, for instance, is ordained by God and serves a useful purpose in cleansing the soul and preparing it for the future life. The Catholic position has been well stated by Dr. J. J. Walsh (*Forum*, December, 1935) and Dr. V. P. Mazzola (*Medical Times*, November, 1940).

Another opposing opinion is held by physicians who maintain that it is the duty of the physician to prolong life and under no conceivable circumstances to shorten it. Physicians also insist that in the lexicon of their profession there is no such word as "incurable." While there is life there is hope. They will tell of cases in which a patient who was pronounced incurable by the best medical minds later got well, or at least recovered sufficiently to outlive some of those who predicted his early demise.

Then these opponents advance the argument that what may be termed incurable today may become curable tomorrow, and point to the discovery of insulin in the treatment of diabetes and the recent miracles performed by the sulfonamides. Finally, they argue that the suffering of terminal cancer can be relieved or diminished by the use of narcotics and the patient made comfortable, or nearly so, until the end.

All of these arguments have their merit and they cannot be brushed aside by a word. There is something fundamental in the human mind which makes us shrink with horror at the thought of shortening the life of a human being, even though he begs for release from his suffering. We feel the same way at the thought of ending the life of newly born human monstrosities an [illegible] imbeciles, creatures that can never be [illegible]-man or live normal human lives [illegible] ep

The President's Page—United States Chapter

of organization of Chapters throughout the Americas, and the enthusiastic cooperation that the College is receiving from the universities, faculties and medical organizations of the Ibero-American nations. The complete organization and active functioning of the Hondurean Chapter is the last word we have received; definite progress is also reported from other medical centers in Central and South America, where the committees in charge are devoting their best efforts toward the completion of Chapters in consonance with the parent organization and the constitution and by-laws of the International College of Surgeons.

The scientific program for the forthcoming International Assembly in Mexico City, to be held August 10-14, is nearing completion. Not only can it be stated beyond a shadow of doubt that the program offers much of great scientific value in the discussion of important medical and surgical problems; but the international contributions are so vast and far-reaching that it might be safe to state that in the history of medical and surgical congresses and assemblies, this will stand out as the most productive, not only of present good, but of the future progress of the program sponsored by the International College of Surgeons. Notwithstanding the European crisis and consequent impediments, many foreign delegates will participate in the scientific program of the Assembly.

These activities of the College in all its avenues of development are not only in constant motion, but are backed by the greatest interest and enthusiasm of all concerned.

DESIDERIO ROMÁN, M.D., PRESIDENT

International Assembly of the International College of Surgeons

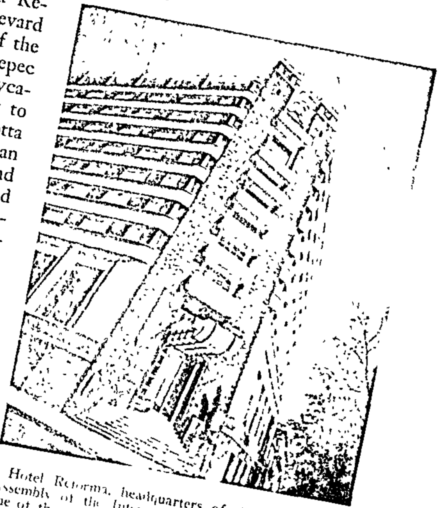
AT THE INVITATION OF THE MEXICAN GOVERNMENT
MEXICO CITY, AUGUST 10 to 14, 1941

HOTEL ACCOMMODATIONS

ON the tree-lined Paseo de la Reforma, a world-famed boulevard which leads from the heart of the Mexican Capital to legendary Chapultepec Castle and park, amid whose ageless sycamores, the Aztec emperors were wont to relax and where Maximilian and Carlotta resided during their brief reign, stands an imposing modern structure in white and maroon stone: the Hotel Reforma, selected as the official headquarters of the convention of the International College of Surgeons, August 10 to 14.

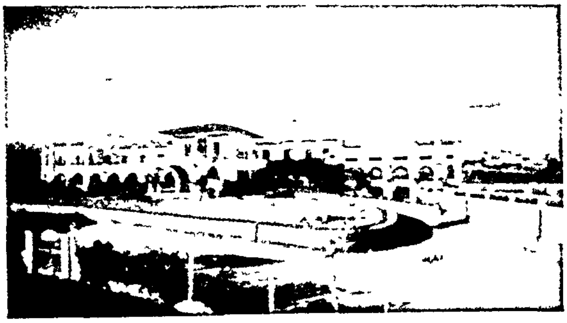
Proud are Mexico City residents of their newest and finest hotel. The building is fireproof, air-conditioned throughout, with purified, circulating ice-water in every room, and the refinement and quiet elegance of a truly fine hotel. Within the premises are dozens of fashionable shops, two night clubs, a bank, ample lounging and rest rooms. From the roof garden a breath-taking view of the Valley of Mexico is to be had in all directions. In that translucent atmosphere, all hues are softened to delicate pastel shades of pink and purple and light green, and in the distance a magnificent backdrop is furnished by the two volcanoes, Popocatepetl and Ixtacihuatl, forever crowned with snow.

The Reforma management has set aside for the convention its spacious mezzanine, where exhibitors approved by the organizing committee will place their stands. Also reserved is a wing of the roof garden, where, for the benefit of the visiting surgeons, the scenic beauties of central Mexico will be reproduced in exhibits sponsored by the various regions.



Hotel Reforma, headquarters of the International Assembly of the International College of Surgeons, one of the world's most luxurious hotels—one of the best appointed in Latin America. It is air-conditioned and supplies warm, cold and purified water in each room. It has three luxurious dining rooms, salons, bar rooms, cabaret, orchestra and floor shows. Members registering at the hotel will find bank and tourist offices, cable facilities, beauty shop, cigar store, curiosity and souvenir bazaars—all for their convenience.

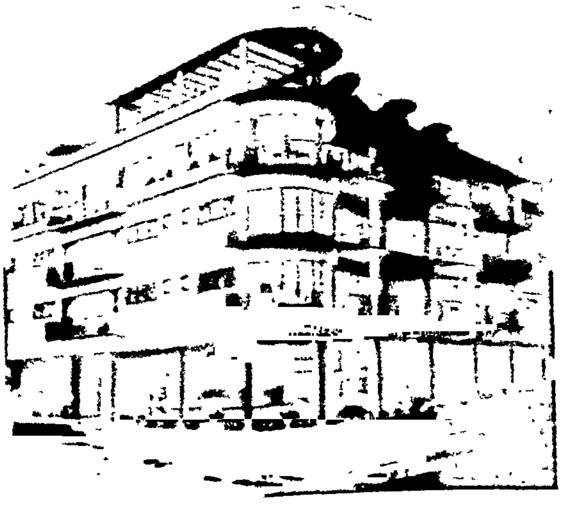
The plenary sessions will be held in the Queen Maya Room, which the Reforma management has [illegible]



The Chula Vista Hotel in Cuernavaca, where elaborate programs of College activities will take place.

posal of the convention. Ordinarily used as the main dining room, it will be closed to the public during that period. It offers ample facilities for the purpose, seating in comfort over two hundred and fifty guests. It owes its name to an original statue of a Maya queen, disinterred not long ago, which now stands at the place of honor.

The Hotel Reforma offers other rooms at which committee meetings may be held, or informal groups may gather. The Della Robbia Salon, containing valuable works of the famed Italian sculptor, is one of them; another is the Beethoven Room, where organ recitals may be enjoyed in deep-tufted comfort.



Hotel La Mar[illegible]

There is also the tap room, one of Mexico City's gayest cabarets, where convivial spirits may gather nightly to dance to a tropical orchestra. An excellent floor show presents the best in Mexican entertainers.

The other hotels at which members will be accommodated are the Chula Vista Hotel in the city of Cuernavaca and the Hotel La Marina, where the official banquet, which will be a gala affair, will be held. The accompanying illustrations depict some of the magnificence of these ultramodern hostelries. The Reforma and the Chulavista offer all the comforts of a modern inland hostelry and the latter all aquatic attractions.

RAILROAD CONNECTIONS

The Wabash Railway serves a rich agricultural and commerical territory en route to St. Louis.

From St. Louis the Missouri Pacific lines follow the west bank of the Mississippi River, the Father of Waters, for many miles, the high cliffs on the opposite side creating a continual succession of picturesque scenes, which pass in review as the train wends its way southward. We then pass through the foothills of the Ozarks and the beautiful Arcadia Valley before arriving at Little Rock, the capital of Arkansas. The following morning (Thursday) around seven-thirty, we pass through the heart of the world's largest oil fields in east Texas. Early in the afternoon we pass through San Antonio and at 8:50 P.M. arrive at Laredo (the Mexican border point) where customs inspection will be held. The authorities are cordial and efficient and the inspection is accomplished with a minimum of red tape. The next day (Friday) we traverse Mexico's great central plateau, passing through Monterrey, Saltillo, San Luis Potosi and many small Indian villages.

The National Railroad Company of Mexico is making the following allowances inside the national boundaries: Members are to pay regular fare for one way tickets and only 25 per cent additional for round trip tickets.

AIR TRAVEL

A discount of 25 per cent for those attending the International Assembly who utilize the Pan American Airways or the Mexican Company of Aviation has been arranged for by Dr. Manuel A. Manzanilla.

CALENDAR OF EVENTS

Mexico City, with a million and a quarter inhabitants, capital of the Mexican Republic, vibrant with over six centuries of dramatic history, traditions and romance, is the oldest metropolis on the American continent. It is also one of the largest and most modern cities in Latin America. Few cities in the world enjoy such a propitious climate, such incomparable surroundings, such a majestic setting.

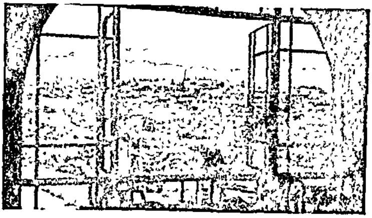
SATURDAY, AUGUST 9.—Upon arrival at Mexico City at 7:35 A.M., there will be an official Mexican welcome at the station, after which each member will be taken to the hotel to which he has been assigned by the Organization Committee. The Reforma Hotel will be the official headquarters, and we will endeavor to locate as many of our members as possible at this hotel.

Registration will take place at the Organizations' Committee's Office, Reforma Hotel, Saturday, August 9, from 4 P.M. to 8 P.M., and Sunday, August 10, from 10 A.M. to 2 P.M.

SUNDAY, AUGUST 10.—At 10 A.M. we will motor to Mexico's National Independence Monument, located on the Paseo de la Reforma, where the International Assembly President will deposit a floral wreath before the eternal light which burns there in honor of the heroes who died for their independence. Assisting in this solemn ceremony will be an official from the city government.

At 11 A.M. we motor to the monument of the renowned Mexican surgeon, Dr. Francisco Montes De Oca, which is located in San Pablo Park. Here the International President of the College will deposit a floral offering, thus symbolically honoring Mexican surgery.

At noon we will motor to the monument of Louis Pasteur, which is located in Cuauhtemoc Square on the Paseo de la Reforma. Here the International Past-President will deposit a floral wreath, and the College will proclaim its motto, "La Sciencie n'a pas de Patire (science has no boundaries)."



View of the City of Cuernavaca from the dining room of the Chula Vista Hotel.

Street scene in Taxco, Mexico, one of the [illegible] which will be visited during the [illegible], exc[illegible] which are being arranged.

At 1 P.M. at the Hotel Reforma the scientific and commercial exhibits will be formally opened by the secretary of the Organization Committee.

At 4 P.M. a motor tour will be taken to the castle of Chapultepec in Chapultepec Park. Here the Governor of the Federal District, in the name of the City of Mexico, will entertain at an afternoon concert, during which he will declare all of the delegates to the Convention honor guests of the city. Tea will be served in the beautiful terraces of the palace of Chapultepec, where Maximilian and Carlotta once held court. Music will be furnished by the Mexico City Police Band and the city's Tipica Orchestra.

HOUSE OF DELEGATES MEETING

The members of the House of Delegates will meet as provided by the constitution and bylaws at the Reforma Hotel between August 10 and 14. Time and place will be announced on the bulletin board.

Articles X and XI of the constitution and bylaws of the International College of Surgeons read as follows:

ARTICLE X

Officers and Legislative Body of the International College of Surgeons

1. *Officers shall be as follows:*
   1. International President
   2. International President-Elect
   3. Immediate Past-President
   4. International Vice-Presidents (three to five in number)

At the head of each international region there shall be an *international regional secretary and treasurer.* The number of international regional secretary-treasurers shall be dictated by the needs of the moment.

5. The *governing bodies* of the International College of Surgeons shall be:
   1. The House of Delegates.
   2. The International Board of Trustees.
   3. International Executive Council.

ARTICLE XI

Components of the House of Delegates

Each country represented in the College shall be entitled to elect *delegates to the House of Delegates* as follows: one delegate for the first hundred members or fraction thereof; one additional delegate for the next *additional two hundred members* or fraction thereof; one additional delegate for each additional three hundred members or fraction thereof. No chapter shall have *more than five delegates,* regardless of its numerical size. Each elected delegate may have an alternate to serve in the event the duly elected delegate *should* be absent.

By *order* of Dr. *Fred H. Albee, International* President. Dr. Max Thorek, International Executive Secretary.

5. International Treasurer
6. *International* Executive Secretary

2. The *General Assembly* shall consist of all the Members of the International College of Surgeons in good standing and shall be the supreme legislative body.

3. *The House of Delegates* shall hold its regular meetings during the regular General Assembly of the College *and shall constitute the legislative organization* of the College.

4. The House of Delegates shall consist of:
   a. Delegates elected by the various countries to *represent them respectively.*
   b. The International Board of Trustees.
   c. The International Executive Council.

The world at large shall be divided into *international regions, or districts,* such as *Europe,* the Near East, Asia, Australia and the American Continents, South, Central, and North.

PROGRAM

Opening Address: The President of Mexico, His Excellency, Manuel Avila Camacho, is expected to open the Assembly.

Other Addresses: Chairman of the Organization Committee. President of the International College of Surgeons. Secretary of the International College of Surgeons. Convocation and conferring of degrees and Honorary Fellowships of the International College of Surgeons.

High Mexican Government officials and diplomatic representatives will be present, and the program will be broadcast over the Mexican network, broadcast arrangements being in charge of the Director General of Information, Department of the Interior of Mexico.

Regular scientific sessions of the International College of Surgeons will be held in the Reina Maya and Beethoven rooms, as follows:

MONDAY, AUGUST 11

9 A.M. to 1 P.M.—Scientific program (see program of scientific addresses below).

1 P.M.—Recess.

3 P.M. to 7 P.M.—Scientific program.

TUESDAY, AUGUST 12

9 A.M. to 1 P.M.—Scientific program.

1 P.M.—Recess.

3 P.M. to 7 P.M.—Scientific program.

WEDNESDAY, AUGUST 13

10 A.M. to 1:30 P.M.—Scientific program.

1:30 P.M.—Recess.

3:30 P.M. to 7:30 P.M.—Scientific program

THURSDAY, AUGUST 14

8 A.M. to 1 P.M.—Special surgical and diagnostic clinics correlating the papers previously presented at the scientific sessions will be arranged by the Hospital Commission of the Organization Committee.

2 P.M.—Special picnic luncheons.

5 P.M.—The entire group will leave for Cuernavaca by automobile over forty-seven miles of excellent and highly picturesque highway winding across the mountain rim south of Mexico City. Here a banquet and dance will be given at the beautiful Chula Vista Hotel by official courtesy of the Organization Committee (tropical evening attire). Cuernavaca was chosen by the Conqueror, Don Hernando Cortes, as the location for one of his palaces, which stands intact to this day. It is also the site of Don Jose de la Borda's famous gardens, which later became the summer home of Emperor Maximilian. This indescribably beautiful city, with its splendid old churches, colonial mansions and idyllic gardens, is at present the favorite vacation resort of Mexico City.

PROGRAM OF SCIENTIFIC ADDRESSES

ARGENTINA

Jorge, Dr Jose Manuel, Buenos Aires Professor of the Faculty of Medicine, member of the International Society of Surgery and the International Society of Gastroenterology.

Subjects (1) "Importance of the Biologic Treatment in Biliary Surgery" In collaboration with Drs Oswaldo Berisso and M. Rey (2) "The Surgical Technic of Operations on the Adrenal Glands" In collaboration with Dr Carlos de Nicola. (3) "Radiologic Aspects of the Acute Abdomen." In collaboration with Dr. Thomas Iturrioz

Mirrizzi, Dr. Pablo Luis, F A C S., F I C.S, Cordoba. President of the Surgical Society; professor of the Faculty of Medicine; delegate of the Assembly of the National University and the Society of Surgery.

Subject. To be announced.

Palacio Posse, Dr Ramon, Buenos Aires. Member of the International Society of Surgery and the Society of Esthetic Surgery of Paris and New York.

Subject "Surgical Treatment in Mammary Hypertrophy."

Pavlovsky, Dr. Alejandro J., F.I.C.S., Buenos Aires. Adjunct professor of surgery of the Faculty of Medicine.

Subject "Treatment of Extensive Vesicovaginal Fistulas Operative Technic."

Roffo, Dr Angel H, F.I.C S., Buenos Aires. Director of the Institute of Experimental Medicine for the Study and Treatment of Cancer, University of Buenos Aires, Doctor *honoris causa;* professor and honorary member of various universities, faculties and scientific societies, member of the Academies of Medicine of Buenos Aires, Madrid, Barcelona, Lima, Rio de Janeiro, Caracas, Genoa, Turin, Mexico, and numerous others.

Subjects (1) "Electrosurgical Treatment of Cancer of the Rectum." In collaboration with Dr. Philip Carranza. (2) "The Surgical Treatment of Cancer of the Larynx" In collaboration with Dr. Robert Ferrari. (3) "Surgical Treatment of Cancer of the Breast." In collaboration with Dr A Emanuel (4) "The Surgery of Cancer of the Urinary Bladder." In collaboration with Dr. Guillermo Iacapraro.

BOLIVIA

Ibanez Benavente, Dr. Abelardo, F.I.C.S., La Paz. Minister of Labor, Health and Social Security professor of the Faculty of Medicine; National Regent of the International College of Surgeons of Bolivia.

Subject: "Bone Grafts with Muscular Pedicles."

Ayala Gonzalez, Dr. Rodolfo, F.I.C.S., Mexico, D.F. President of the Mexican Society of Transfusions, member of the Mexican Academy of Surgery; surgeon to the hospitals

Subject: "Blood Transfusion."

Bandera, Dr. Benjamin, F.I.C.S., Mexico, D.F. President of the Mexican Society of Anesthetists; member of the Mexican Academy of Surgery, the National Academy of Medicine, the Medical Faculty.

Subject "Certain Aspects of Cyclopropane Anesthesia."

Carrasco De Mier, Dr. Matias, F.I.C.S., Mexico, D.F. Formerly surgeon to the Spanish Navy.

Subjects (1) "Ocular Manifestations of Dental Origin" (2) "Certain Aspects of Oral Surgery." In collaboration with Dr. Federico Pascual del Roncal

Castillo Najera, Dr. Francisco, F.A.C.S., F.I.C.S., Mexico, D.F., and Washington, D. C. Mexican Ambassador to the United States of America; surgeon-general to the army; member of the Mexican Academy of Surgery, the National Academy of Medicine, the Association of Military Surgeons, the National Academy of Medicine of Lima, Peru, the Belgian Society of Urology, the International Surgical Society, and others; honorary member of the Association of Military Surgeons of the United States.

Subject. To be announced.

Fernandez Fierro, Dr Dario, F.A.C.S., F.I.C.S., F.I.C.A., Mexico, D.F. Vice-president of the Organization Committee of the International Assembly of the International College of Surgeons; member of the Mexican Academy of Surgery, the National Academy of Mexico, the International Surgical Society; professor of the Surgical Faculty of the University and Hospitals

Subject: "Parathyroid Surgery." In collaboration with Dr. Manuel A. Manzanilla.

Fonseca Garcia, Dr Francisco, F.I.C.S., Mexico, D.F. Secretary of the Organization Committee of the International Assembly of the International College of Surgeons, member of the Mexican Academy of Surgery: professor of surgery at the University and Hospitals.

Subjects: (1) "Preoperative Splanchnic Block of Alessandri and Valdoni" (2) "Surgery of the Suprarenals in Relation to Diabetes Mellitus" Both in collaboration with Dr. Manuel A Manzanilla.

Lopez Esnaurrizar, Dr Miguel, F.I.C.S., Mexico, D.F. Vice-president of the Committee of Organization of the International Assembly and National Regent of the International College of Surgeons for Mexico, member of the Mexican Academy of Surgery, the International Society of Surgery, the International Society of Gastroenterology; professor of the Faculty of Surgery and surgeon to the Hospitals.

Subjects: (1) "Surgical Facies." In collaboration with Dr. Manuel A. Manzanilla. (2) "Biologic Treatment of Hernias."

Manzanilla, Dr. Manuel A., F.I.C.S., Mexico, D.F. President of the Organization Committee of the International Assembly and National Regent of the International College of Surgeons: member of the Mexican Academy of Surgery, the National Academy of Sciences, the Academy of Medical Science of Havana, the International Surgical Society, the International Society of Gastroenterology; surgeon to the Hospitals.

Subjects: (1) "Parathyroid Surgery." In collaboration with Dr Dario Fernandez Fierro. (2) "Preoperative Splanchnic Block of Alessandri and Valdoni." In collaboration with Dr. Francisco Fonseca Garcia. (3) "Surgery of Suprarenals in Relation to Diabetes Mellitus." In collaboration with Dr. Francisco Fonseca Garcia (4) "Surgical Facies." In collaboration with Dr. Miguel Lopez Esnaurrizar.

Ortiz Tirado, Dr. Alfonso, F.I.C.S., Mexico, D.F. Director of the Clinic of Ortiz Tirado; member of the Mexican Academy of Surgery; surgeon to the Hospitals

Subject "Structural Changes in the Surgery of Bone Grafts"

Sanchez Neira, Dr. Ignacio, F.I.C.S., Mexico, D.F. General of the Mexican Army; director of Military Sanitation of Mexico; member of the Association of Military Surgeons.

Subject: "The New Military Hospital of Mexico" (with projection slides).

Torres Estrada, Dr. Antonio, F.I.C.S., Mexico, D.F. Member of the Mexican Society of Ophthalmology and Otorhinology and the Mexican Academy of Surgery; professor of the Faculty of Surgery; surgeon to the Hospitals.

Subjects: (1) "Modifications of the Ciclodialysis of Heim" (2) "The Author's Technic of Dacriocystorhinostomy" (3) "Surgical Criteria in Cataract."

Vazquez, Dr. Mariano, F.A.C.S., F.I.C.S., Mexico, D.F. Member of the Mexican Academy of Surgery and the Mexican Society of Psychiatry and Neurology; professor of the Faculty of Surgery; surgeon to the Hospitals.

Subjects (1) "Original Surgical Technic of Ventriculography" (with motion pictures). (2) "Original Technic of Craniotomy" (with motion pictures).

Villanueva, Dr Aquilino, F.I.C.S., Mexico, D.F. President of the Mexican Academy of Surgery; president of the Mexican Society of Urology; member of the National Academy of Medicine and the International Society of Surgery; professor of the Faculty, director of the General Hospital; surgeon to the Hospitals

Subject To be announced

PALESTINE

Mandl, Dr. Felix, F.I.C.S., Jerusalem Professor of Surgery, University of Hadassah, Jerusalem, member of the International Society of Surgery and of numerous academies and societies, National Regent of the International College of Surgeons for Palestine.

Subject "Observations and Problems Relating to Operation for Lesions of the Semilunar Cartilage"

PARAGUAY

The National Directorate of the Military Sanitary Board of Paraguay will send a representation to the Assembly The names and subjects will be announced later.

UNITED STATES

Acuff, Herbert, Ph.D., M.D., F.A.C.S., Knoxville, Tennessee Visiting surgeon, Knoxville General and Fort Sanders Hospitals, chief of staff, St Mary's Memorial Hospital, consulting surgeon, Beverly Hills Sanatorium

Subject: "Thoracic Surgery"

Albee, Fred H, B.A., M.D., Sc.D., LL.D., F.A.C.S., F.I.C.S., New York City. International President, International College of Surgeons; consulting surgeon, Pennsylvania Railroad, Seaboard Airline Railway Company and numerous hospitals, consulting orthopedic surgeon, Hospital for Joint Diseases, Sea View, Staten Island and Lutheran Hospitals of New York, and many other hospitals throughout New York and New Jersey.

Presidential Address: "Indications for Surgical Immobilization of Pulmonary and Osseous Tissues Are the Same."

Also: "The Biophysiological Considerations in Treatment of Fracture of the Hip."

Babcock, W. Wayne, M.A., M.D., LL.D., F.A.C.S., Philadelphia, Pennsylvania. Professor of surgery and clinical surgery, Temple University, surgeon-in-chief, Temple University Hospital; surgeon, Philadelphia General Hospital

Subject: To be announced later

Bacon, Harry E, B.S., M.D., F.A.C.S., F.I.C.S., Philadelphia, Pennsylvania Assistant professor of proctology, Temple University, associate professor of proctology, Pennsylvania Graduate School, proctologist, Temple University Hospital, National Stomach Hospital, Graduate Hospital, University of Pennsylvania; visiting and consulting proctologist, numerous hospitals.

Subject "Surgical Treatment of Prolapse of the Rectum Report of 700 Cases."

Baehr, Frank H, Ph.B., M.D., F.I.C.S., Springfield, Massachusetts. Secretary, New England Section, International College of Surgeons; visiting surgeon, cancer section, Westfield (Massachusetts) State Hospital; consulting surgeon, Springfield Health Department, chairman, Springfield Public Health Council

Subject: "The Treatment of Rectal Malignancies"

Bailey, Charles P, M.D., Philadelphia, Pennsylvania. Thoracic surgeon, Hahnemann Medical College and Hospital and St. Luke's Children's Medical Center.

Subject: "A New Surgical Procedure in the Treatment of Pulmonary Tuberculosis: A Preliminary Report on Extraparietal Pneumothorax."

Bainbridge, William Seaman, A.M., M.D., Sc.D., Litt.D., LL.D., C.M., F.I.C.S., F.I.C.A., New York City International Treasurer, International College of Surgeons, surgical director, Manhattan State Hospital; consulting surgeon, United States Public Health Service, New York District; U. S. Navy, Third District; and a large number of hospitals in the metropolitan area; Surgical Fellow, New York Academy of Medicine; honorary member of many foreign royal academies and national societies of surgeons.

Subjects: (1) Stereopticon cancer clinic, "Tumor Formations in the Mineral, Vegetable and Animal Kingdoms." (2) Motion pictures of the International Congress of Military Medicine and Surgery, held in Washington last year.

Behrend, Moses, M.S., M.D., F.A.C.S., F.I.C.S., Philadelphia, Pennsylvania, Senior Regent, State of Pennsylvania, International College of *Surgeons;* attending surgeon, Jewish and Mt Sinai Hospitals; thoracic surgeon, department of tuberculosis, Philadelphia *General Hospital and Tuberculosis Sanatoria,* State of Pennsylvania; consulting surgeon, Foster Home *for Jewish Orphans*

Subject: "The Changing Pattern of Collapse Therapy in the Treatment of Tuberculosis of the Lungs."

Blaess, Marvin J, A.B., M.D., Detroit, Michigan. Certified by National Board of Ophthalmology; Fellow of Distinguished *Service Foundation and* American Federation for Clinical Research; *attending* ophthalmic surgeon, Evangelical Deaconess Hospital.

Subject: "Color Movie of the Barraquer Intracapsular Suction Cataract Operation."

Carson, William J, M.D., F.A.C.S., F.I.C.S., Milwaukee, Wisconsin. Preceptor in surgery, Wisconsin; instructor in surgery, Marquette University; surgeon, St Luke's Hospital.

Subject "Surgery of the Ureter" (based on twenty years of clinical experience, with a large amount of autopsy material to correlate the relationship of the ureter to abdominal surgery)

Collins, Donald C, B.A., M.D. (Surg. Path), L.M.C.C., F.A.C.S., F.I.C.S., Major, Med. Res, U.S.A., U.I., Los Angeles, California Assistant professor of surgery, Medical Evangelists, attending surgeon, Hollywood Hospital, surgeon, visiting staff, Good Samaritan Hospital.

Subject "Methods of Reducing the Present Excessive Mortality in Generalized Peritonitis" (based on 5000 cases and emphasizing the role played by chemotherapy).

Corbusier, Harold D, M.D., F.I.C.S., Plainfield, New Jersey President, American Association of Military Surgeons

Subjects (1) Greetings from the military surgeons of the United States to the military and naval physicians and surgeons of Mexico and other southern republics (2) Medico-military symposium.

Crotti, Andre, M.D., F.A.C.S., F.I.C.S., Columbus, Ohio Past-President, International College of Surgeons, surgeon, Grant, St. Francis, Mt. Carmel and Children's Hospitals

Subject: Oration, "Cancer as It Stands Today. Original Research."

Cunha, Felix, M.D., F.I.C.S., San Francisco, California Visiting physician, University of California Hospital; instructor in medicine, lecturer in medical history and medical bibliography, University of California; vice-president, National Gastroenterological Society.

Subject: "Primary Edema of the Stomach: Edematous Gastritis."

Dimitry, Theodore J., M.D., F.A.C.S., F.I.C.S., New Orleans, Louisiana. Professor of ophthalmology and director of department, Louisiana State University School of Medicine.

Subject: Abstract of an unpublished monograph, "The Story of the Artificial Eye, The Monoply: Motion for the Prothesis, A Plastic Prothesis and a Newer Surgery Towards the Production of Movement for the Prothesis."

Dively, Rexford, M.D., Kansas City, Missouri. Affiliations and subject to be announced later.

Douglass, Fred M., M.D., F.A.C.S., F.I.C.S., Toledo, Ohio. Past-President, United States Chapter, International College of Surgeons; director of surgery, St. Vincent's Hospital; attending surgeon, Toledo Hospital; consulting surgeon, Mercy Hospital, Monroe, Michigan.

Subject: "Surgery of the Gallbladder and Bile Ducts."

Doyle, Thomas, M.D., F.A.C.S., F.I.C.S., Philadelphia, Pennsylvania. Associate professor of surgery and lecturer in general and plastic surgery, Hahnemann Hospital; senior surgeon, Hahnemann Hospital; consulting surgeon, Broad Street Hospital.

Subject: "Moving Pictures of Plastic Surgery."

Eagleton, Wells P., M.D., F.A.C.S., F.I.C.S. Medical director, Newark Eye and Ear Infirmary; chief of the division of cranial surgery, Newark City Hospital; attending cranial surgeon and consultant to numerous New Jersey hospitals; ophthalmologist and otologist in Newark and Morristown hospitals.

Subject: "Suppurative Meningitis from the Ear and Nose."

Einhorn, Max, M.D., New York City. Professor of gastroenterology, New York Post-Graduate Medical School.

Subject: "On the Treatment of Peptic Ulcers (Medical and Surgical)."

Enloe, D. C., M.D., F.A.C.S., Sherman, Texas. President of staff, Wilson N. Jones Hospital; surgeon, The Stout Clinic.

Subjects: (1) "Peritonitis" (with special reference to ruptured appendices and the instillation of sulfanilamide into the peritoneal cavity). (2) "Spinal Anesthesia" (with special discussion of Lemmon's method of continuous spinal anesthesia).

Ettleson, Abraham, M.D., Chicago, Illinois. Affiliations to be announced later.

Subject: "A New Surgical Approach to the Trigeminal Sensory Root."

Fay, Temple, B.S., M.D., F.A.C.S., F.I.C.S., Philadelphia, Pennsylvania. Professor of neurology and neurosurgery, Temple University; active consulting neurosurgeon, Philadelphia General and Temple University Hospitals.

Subject: "Spinal Cord Localization and Cerebral Problems."

Golden, Benjamin I., A.M., M.D., F.A.C.S., F.I.C.S., Elkins, West Virginia. Treasurer, United States Chapter, International College of Surgeons; director, Golden Clinic and Davis Memorial Hospital; surgeon-in-charge, Davis Memorial Hospital.

Subject: "The Present-Day Status of Chemotherapy in Surgery, with Special Reference to Abdominal Surgery."

Hall, Curtis Lee, M.D., F.A.C.S., F.I.C.S., Washington, D. C. Clinical professor of surgery, George Washington University; orthopedic surgeon, associate orthopedic surgeon and consultant orthopedic surgeon to numerous hospitals.

Subject: "Series of Cases of Ewing's Tumor in Children."

Hutton, James H., M.D., F.A.C.S., Chicago, Illinois. Past-President, Chicago Medical Society.

Subject: "Medical *vs.* Surgical Treatment of Essential Hypertension" (with lantern slides).

Jackson, Chevalier L., A.B., M.D., M.Sc. (Med.), F.A.C.S., F.I.C.S., Philadelphia, Pennsylvania. National regent, bronchoscopy, International College of Surgeons; professor of broncho-esophagology, Temple University; assistant professor of bronchoscopy and laryngeal surgery, Pennsylvania Graduate School; bronchoscopist, Temple University and Chestnut Hills Hospitals.

Subject: "Surgical Treatment of Cancer of the Larynx."

Jaeger, James R., M.D., F.I.C.S., Denver, Colorado. Professor of surgery, University of Colorado School of Medicine and Hospital; chief of the neurosurgical departments, Presbyterian, Children's and Denver General Hospitals; neurosurgeon, Fitzsimmons General Hospital, United States Army, Denver.

Subject: "Operative Mortality of Tumors of the Cranial Cavity."

Lapenta, Vincent A., M.D., F.I.C.S., Indianapolis, Indiana. Chairman of the Board of Examiners and Board of Trustees, United States Chapter, International College of Surgeons. Other affiliations to be announced later.

Subject: "Critical Review of Recent Trends in Gastric Surgery" (to be delivered in Spanish).

Lee, William, M.D., Philadelphia, Pennsylvania.

Subject: Discussion of a paper on Peritoneoscopy.

McNealy, R. W., M.D., F.I.C.S., Chicago, Illinois. Senior Regent for State of Illinois, International College of Surgeons; president of surgical staff, Cook County Hospital; professor of surgery, Northwestern University.

Subject: Opening discussion on Dr. Douglass' paper.

Miller, George I., M.D., F.I.C.S., Brooklyn, New York. Affiliations and subject to be announced later.

Noble, Thomas B., Jr., M.D., F.I.C.S., Indianapolis, Indiana. Consulting staff, Indianapolis City Hospital; visiting surgeon, Methodist, St. Vincent's and Hamilton County Hospitals.

Subject "The Place of Plication in the Treatment of Peritonitis" (illustrated with lantern slides).

Novak, Emil, M.D., Baltimore, Maryland. Affiliations and subject to be announced later.

Román, Desiderio, A.M., M.D., D.Sc., F.A.C.S., F.I.C.S., Philadelphia, Pennsylvania. President, United States Chapter, International College of Surgeons; surgeon-in-chief, St. Luke's and Children's Medical Center; professor of clinical surgery, Hahnemann Medical College; consulting surgeon, Wilmington (Delaware) Memorial Hospital.

Subject: To be announced later.

Sammons, W. P., M.D., F.A.C.S., F.I.C.S., Wheeling, West Virginia. Member of staff, Wheeling and Ohio Valley General Hospitals.

Subject: "Compressed Fracture of the Spine."

Sawyer, Kenneth C., M.D., Denver, Colorado. Affiliations and subject to be announced later.

Smith, Arthur Lawrence, A.M., M.D., F.A.C.S., Lincoln, Nebraska. Chief of department of medicine, St. Elizabeth's Hospital; consultant in heart diseases, Lincoln Municipal Clinic; member, Lincoln Advisory Health Board.

Subject: "Changes in the Heart During Operation with Local, Splanchnic, General and Spinal Anesthetics" (illustrated with stethograms, electrocardiograms and the reproduced heart sounds).

Thorek, Max, M.D., F.I.C.S., Chicago, Illinois. Professor of surgery, Cook County Post-Graduate School of Medicine; attending surgeon, Cook County Hospital; surgeon-in-chief, American Hospital of Chicago; consulting surgeon, Municipal Tuberculosis Sanitarium; member of the Surgeons' Society of Paris, the Royal Academy of Medicine of Turin, the Surgical Society of Madrid, the International Society of Gastroenterology and many others.

Subject: "Tubovalvular Gastrostomy" (with motion pictures).

Urrutia, Aureliano, B.A., B.S., M.D., F.A.C.S., F.I.C.S., San Antonio, Texas. Surgical staff, Santa Rosa Hospital.

Subjects: (1) "Thirty Years of Panhysterectomy" (1,000 cases operated on with the same technic, without any clamps; films). (2) "Surgical Treatment of Certain Deformities" (lantern slides and film taken at Santa Rosa Hospital).

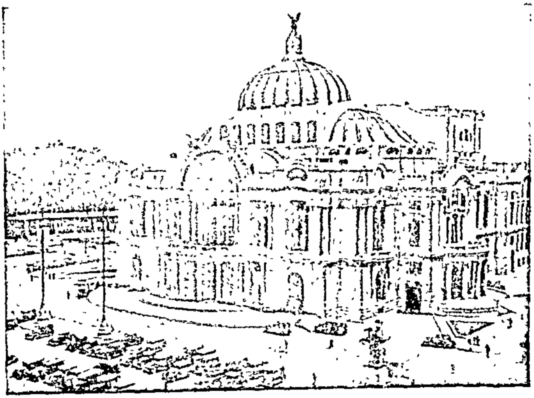
Volini, Italo F., M.D., F.A.C.P., Chicago, Illinois. Professor and head of department of medicine, Loyola University; vice-president and attending physician, Cook County Hospital; chairman, department of medicine, Mercy Hospital and Loyola Clinics; chairman, Pneumonia Control Commission.

Subject: "Empyema Thoracis Complicating Pneumococcus Pneumonia: A Medical and Surgical Analysis."

Dr. John Peffer and *Dr. Hugh O'Neil*, associates, assisting.

Wolfe, Otis I., M.D., F.I.C.S., Marshalltown, Iowa. Chief surgeon, department of ophthalmology, Deaconess Hospital.

Subject: "The Barraquer Operation for Incipient Cataract and Glaucoma" (based on personal instruction by Dr. Barraquer in Spain and over seventeen years of practice, covering about 3,000 cases).



Palace of Fine Arts, Mexico, D. F. In this luxurious theatre, considered the most beautiful in all America, will be held the solemn ceremony of inauguration of the International Assembly.

TRANSPORTATION SCHEDULE

Assembly of the International College of Surgeons

Mexico City, August 10-14

The following train schedules from various eastern points are suggested for members of the International College of Surgeons, their families and friends. These schedules are arranged to insure connection with the Special DeLuxe Train at either Chicago, St. Louis or San Antonio. It appears that there will be a sufficient number of reservations from various eastern points to secure private Pullman cars for the exclusive use of members and their friends. These cars will be attached to the Special DeLuxe Train en route, at either Chicago or St. Louis.

New York Central Railroad via Chicago

Lv. New York City	4:30 P.M.	Aug. 5
Lv. Albany	7:09 P.M.	Aug. 5
Lv. Syracuse	9:59 P.M.	Aug. 5
Lv. Rochester	11:21 P.M.	Aug. 5
Lv. Buffalo	12:25 A.M.	Aug. 6
Ar. Chicago	8:30 A.M.	Aug. 6

Pennsylvania Railroad via Chicago

Lv. New York City	2:45 P.M.	Aug. 5
Lv. Newark	3:00 P.M.	Aug. 5
Lv. N. Philadelphia	4:13 P.M.	Aug. 5
Lv. Harrisburg	6:13 P.M.	Aug. 5
Lv. Pittsburgh	11:59 P.M.	Aug. 5
Ar. Chicago	7:45 A.M.	Aug. 6

Members from Washington and Baltimore would join this train at Harrisburg, leaving Washington via the Pennsylvania Railroad at 1:50 P.M. and Baltimore at 2:35 P.M.

New York Central Railroad via St. Louis

Lv. New York City	8:00 P.M.	Aug. 5
Lv. Boston	5:30 P.M.	Aug. 5
Lv. Albany	10:45 P.M.	Aug. 5
Lv. Syracuse	1:16 A.M.	Aug. 6
Lv. Cleveland	7:37 A.M.	Aug. 6
Lv. Indianapolis	11:55 A.M.	Aug. 6
Lv. Terre Haute	1:15 P.M.	Aug. 6
Ar. St. Louis	4:58 P.M.	Aug. 6

Pennsylvania Railroad via St. Louis

Lv. New York City	8:35 P.M.	Aug. 5
Lv. Newark	8:50 P.M.	Aug. 5
Lv. N. Philadelphia	10:02 P.M.	Aug. 5
Lv. Harrisburg	11:59 P.M.	Aug. 5
Lv. Columbus, Ohio	9:30 A.M.	Aug. 6
Lv. Dayton, Ohio	10:51 A.M.	Aug. 6
Lv. Indianapolis	12:10 P.M.	Aug. 6
Lv. Terre Haute	1:33 P.M.	Aug. 6
Ar. St. Louis	4:45 P.M.	Aug. 6

Baltimore and Ohio Railroad via St. Louis

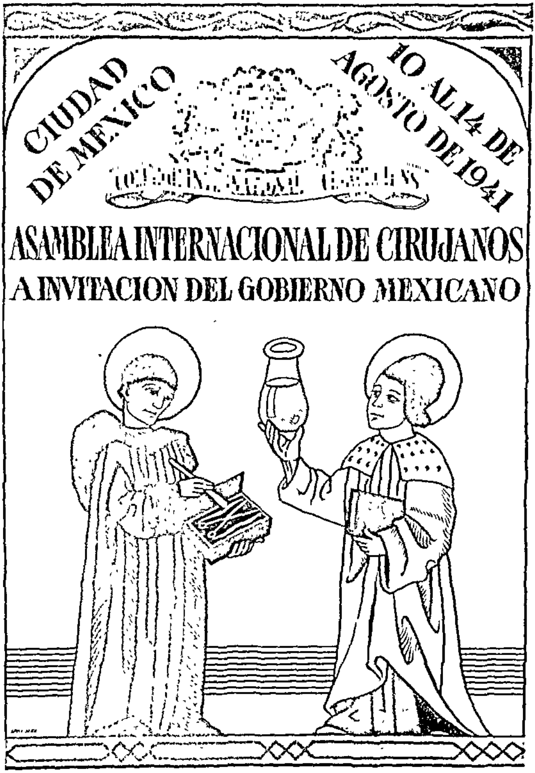
Lv. Philadelphia	5:14 P.M.	Aug. 5
Lv. Wilmington	5:46 P.M.	Aug. 5
Lv. Baltimore	7:12 P.M.	Aug. 5
Lv. Washington, D. C.	8:20 P.M.	Aug. 5
Lv. Cincinnati	9:50 A.M.	Aug. 6
Lv. Vincennes, Ind.	1:18 P.M.	Aug. 6
Ar. St. Louis	4:50 P.M.	Aug. 6

Special DeLuxe Train

Lv. Chicago via Wabash Ry.	11:40 A.M.	Aug. 6
Ar. St. Louis via Wabash Ry.	5:10 P.M.	Aug. 6
Lv. St. Louis via Mo. Pac. Ry.	5:30 P.M.	Aug. 6
Ar. San Antonio via Mo. Pac. Ry.	4:30 P.M.	Aug. 7
Lv. San Antonio via Mo. Pac. Ry.	4:45 P.M.	Aug. 7
Ar. Laredo via Mo. Pac. Ry.	8:50 P.M.	Aug. 7
Ar. Monterrey via Nat. Rys.	7:35 A.M.	Aug. 8
Ar. Saltillo via Nat. Rys.	11:00 A.M.	Aug. 8
Ar. San Luis Potosi via Nat. Rys.	7:10 P.M.	Aug. 8
Ar. Mexico City via Nat. Rys.	7:35 A.M.	Aug. 9

SPECIAL ASSEMBLY TRAINS

Reservations for travel and hotel accommodations should be made promptly by those planning to attend the International Assembly at Mexico City. Special trains will leave New York City and will stop at Chicago, St. Louis, San Antonio and other points.


CIUDAD DE MEXICO
10 AL 14 DE AGOSTO DE 1941
ASAMBLEA INTERNACIONAL DE CIRUJANOS
A INVITACION DEL GOBIERNO MEXICANO

The above illustrates the cover page of the first book on surgery printed on the American continent It appeared in *Suma y Recopilacion de Chirurgia, con un Arte Para Sagrar Muy Util y Provechosa.* Alonzo Lopez, who was born in Inojosos, was surgeon and practitioner of the Hospital of St Joseph of the Indians, of the already celebrated city of Mexico. The work was dedicated to the illustrious Don P. Moya de Contreras, Archbishop of Mexico and of the Council of his Majesty. The title of the book preserves the autography of the original manuscript. The work was published by Antonio Ricarco in 1578 Santos y Damian, to whom is attributed the first human grafting operation, was looked upon in ancient times as a saint Jacobo de Voragine is represented relating that the guardian of the old Basilica of San Cosme and San *Damian,* in *Rome, had* one *limb* rendered useless by cancer. The legend further relates that the two saints appeared to the sick man and consulted about his condition. San C [illegible] exp [illegible] the opinion that the leg should be amputated, and pro [illegible] another to replace it. San Damian then recalled that [illegible] Moor had been buried in the cemetery of San Pedro [illegible] gested that they take one of the Moor's limbs and tr [illegible] the legendary story goes, was accomplished

GUILD ACTIVITIES

POST GRADUATE STUDY GUILD, UNITED STATES CHAPTER

DIRECTOR	DIRECTOR EASTERN STATES	DIRECTOR WESTERN STATES	DIRECTOR NORTHWESTERN STATES
DESIDERIO ROMAN, M.D.	**GEORGE S. FOSTER, M.D.**	**CHAS. H. ARNOLD, M.D.**	**JAMES C. MacGREGOR, M.D.**
250 South Seventeenth Street	925 Chestnut Street	Terminal Building	Medical Arts Building
PHILADELPHIA, PA.	MANCHESTER, N H.	LINCOLN, NEBRASKA	GREAT FALLS, MONTANA

Colorado Guild Meeting

The Colorado Guild Meeting of the International College of Surgeons opened Sunday evening, April 27, 1941, at 6:30 at the Shirley Savoy Hotel in Denver. This first meeting consisted of a get-together dinner, followed by talks on non-scientific subjects by some of the guest speakers.

PROGRAM OF ACTIVITIES, MONDAY, 8 A.M. to NOON

8 A.M. Registration.

Room 2, Dr. Hamilton I. Barnard

8-9 A.M. Operative clinic: Arthrotomy of the knee.

9 A.M.-12 NOON. Presentation of cases: Arthroplasty of the knee; double arthrotomy of the knee; spinal fusion.

Room 4, Dr. Henry Buchtel

8-10 A.M. Transurethral prostatic resection; demonstration of tidal irrigation.

Room 4, Dr. George F. Netherton

10 A.M.-12 NOON. Multiple uterine fibroids; hysterectomy.

Room 5, Drs. George B. Kent and Kenneth C. Sawyer

8 A.M.-12 NOON Exophthalmic goiter complicated by diabetes mellitus; partial thyroidectomy Toxic nodular goiter; partial thyroidectomy. Presentation of cases: Exophthalmic goiter with extremely high basal metabolic rate; reconstruction of the common bile duct; ruptured duodenal ulcer.

Room 6, Motion Picture Program

8 00 Thyroglossal cyst. The Lahey Clinic, Boston

8:10 Hernioplasty; modified Bassini technic for the cure of indirect inguinal hernia Dr Mims Gage, Tulane University of Medicine.

8:30 Resection of the colon and primary end-to-end anastomosis with complementary cecostomy Dr Fred W. Rankin, Lexington, Kentucky

8:55 The use of extra-fine catgut in gastrointestinal surgery. Dr. John O. Bower, Temple University of Medicine.

9:10 Tumor of the spinal cord Dr J Rudolph Jaeger, Denver.

9:25 Nephrectomy for tuberculosis of the kidney Dr. Hugh H. Young, Brady Urological Institute, Baltimore.

9 40 The application of thick split skin grafts Dr. J. Barrett Brown, Washington University School of Medicine, St. Louis.

10 10 Compound depressed fracture of the skull. Dr. J Rudolph Jaeger, Denver.

10 25 Transverse cervical cesarean section. Dr. Louis E Phaneuf, Boston.

10 45 Appendectomy; inversion, nonligation technic. Dr Alton Ochsner, Tulane University School of Medicine

11 00 Subdural hematoma Dr. J. Rudolph Jaeger, Denver.

11 20 Intervertebral disc Injury (herniated nucleus pulposis) Dr J. Rudolph Jaeger, Denver

11 35 Vaginal repair of cystocele and rectocele. Dr. Arthur H. Curtis, Northwestern University Medical School.

Room 7, Dr. Kenneth D. A. Allen

8 A M -12 NOON Bone tumors; X-ray and lantern slide demonstration.

Laboratory, Dr. P. C. Carson

Carcinoma of the thyroid gland, exhibition of gross and microscopic specimens.

East Hall, Drs Kenneth D A. Allen, Frank B. Stephenson and John H. Jamison

Exhibit of bone tumors.

X-Ray Laboratory, The Technical Staff

Demonstration of quick development of films.

ROUND-TABLE DISCUSSIONS

Dr Hamilton I Barnard officiated as moderator at the round-table discussion He called for questions relating to Dr Henry Buchtel's operation, transurethral resection of the prostate

Dr Arnold Is there any difficulty in removing enough of the urethral portion of the prostate, and yet not destroying or injuring the sphincter?

Dr Buchtel The amount of tissue which should be removed depends on the age of the patient If the resection is done down to the external sphincter, one is liable to injure the sphincter This is not serious in young men, as the muscles have better tone In older patients especially those over eighty, it is best not to resect close to the sphincter It is unnecessary in a man of this age, as the only reason for taking out the entire prostate is to prevent recurrence In an older man this is not needed, as he will probably not live long enough to have a recurrence of the trouble.

Dr. Kent There is much talk about hormone therapy in these cases Will you enlighten us?

Dr Buchtel The belief is that hypertrophy of the prostate is due to hormone change. This has not been proved Many hormones have been tried, without much success. The newest one to be used is stilbestrol. Experimenters have had some discouraging results, but they probably used it in the wrong type of case. It might be tried on people who are up and around It has helped many patients, but it does not keep them well I usually start them off with ½ mg. a day to see how they tolerate it, then increase the dose to 1 mg. a day They all say they feel better and are able to void easier However, I have seen no diminution in the size of the prostate

Dr. Nesbit Then you believe the drug should be used for hypertrophy?

Dr. Buchtel. Yes

Dr Barnard then called for a discussion on Dr. Netherton's hysterectomy demonstration.

Dr. Shivers· Which is the better method in the tuberculous patient, X-ray or surgery?

Dr. Netherton I have not had much experience with tuberculous patients, but I believe I would do a surgical procedure The patient this morning was a woman forty-nine years of age She had a small uterus with diffuse fibrosis throughout, and profuse bleeding. She had to go to bed two or three days every month, and yet would bleed so much she would faint. On opening the abdomen the uterus was found to be small, a
adenofibromate
carcinoma of .
She felt she would prefer to have the source of the bleeding removed She had puerperal infection with her last child seven years ago. Radium or X-ray given in the face of anemia and the history of pelvic infection did not seem to be indicated In answer to Dr Shivers' question, I would say surgery, although I may be wrong

Dr. Crawford· What is the incidence of surgical mumps in relation to pelvic surgery? I wonder if there is any new concept as to the cause for the development of surgical mumps I would like to be enlightened on that subject

Dr. Netherton: I have had a few cases of surgical mumps, and believe they have been due to infection in the mouth. I believe if a patient is instructed in mouth hygiene before surgery, the incidence of surgical mumps will be less. If they do develop, early application of radium or X-ray will cause them to subside. Also sulfanilamide makes this condition much less serious than previously.

Dr. Jobe: In answer to Dr. Shivers' question on the tuberculous patient, I would not operate for fibroids on a patient with active tuberculosis of the lungs. The use of X-ray brings marvelous results The patient continues to bleed for two or three months, and that is discouraging; however, in three months the fibroids have diminished and they finally disappear.

Dr. Netherton: I misunderstood the question; I thought Dr. Shivers meant would I operate if a tuberculous condition existed in the abdomen Careful surgery would be indicated in tuberculosis of the abdomen. Oftentimes opening the abdomen and letting in air will cure the condition.

Dr Gillen I have had a few cases of surgical mumps, and it is my conclusion that it is more or less associated with the hygienic condition of the mouth. In regard to Dr Netherton's case, I think a person forty-nine years old, in the condition he has described, and if there is no contraindication, should certainly be operated upon.

Dr. Barnard then called for discussion on the partial thyroidectomy done by Dr George B. Kent and Dr Kenneth C. Sawyer

Dr. Netherton What experience have you had in preoperative iodine determination, in relation to the prognosis of the case and in relation to the return of hyperthyroidism?

Dr Kent If there is an elevated iodine level preoperatively, the chances of recurrence are less than if there is a normal or low blood iodine

Dr Netherton: That can be explained by the fact that in preoperative hyperthyroidism the iodine may return to normal before operation.

Dr. Thorek Just an observation. This seminar is primarily intended for the younger surgeon. In watching Dr Kent, one concludes that he is a very dangerous surgeon for the younger man who will conclude that everything is quite easy, but it is not quite so easy I would counsel that before one masters the surgery of the thyroid, particularly in the beginning of his career, he should first of all decide whether he wishes to divide the muscles high up, or follow the precept practiced by Dr Kent of straight incision in the midline and retraction. This can be done routinely by the experienced, and should not be attempted by the inexperienced The second comment I wish to make is that the field of operation this morning was conspicuously free from blood. This is attributable to the mastery of the principles of hemostasis I would like to congratulate Dr. Kent for his masterly demonstration this morning.

Dr Sawyer Why do you spend so much time cleaning the superior pole when doing a thyroidectomy?

Dr Kent The reasons are: To clean off the muscle, to avoid injury to the high-lying parathyroid gland, to get the vessels of the pole clean and free so as to cut down on the likelihood of the ligature's slipping off the superior thyroid artery, and, what is most important, to do a complete operation. We have long known that the superior pole is the most common site of recurrence.

Dr Arnold Some surgeons say that you can see the parathyroids, and others say that you cannot see them. Do you look for the parathyroids, or do you just stay away from them?

Dr. Kent. Exposure of the parathyroids is an altogether different operation. In these cases one usually has a smaller-sized thyroid gland, and one must have an absolutely bloodless field. We never look for the parathyroids in a thyroidectomy, and I do not believe it is necessary.

Dr. Jobe: At the Lahey Clinic the younger men are showing the recurrent laryngeal nerve. I had the pleasure of observing there, and of having the recurrent laryngeal nerve demonstrated to me. It is not hard to do, and it can be traced to where it goes behind or anterior to the inferior thyroid If you follow the branches you will find the lower parathyroid However, it is certainly hard to find the upper parathyroid

Dr Kent Yes, it is easy to find the nerve, but I am inclined to believe that if you look for it and demonstrate it routinely, you will probably have a good many patients with tracheotomy tubes in their throats It is not necessary, for when you pull the capsule back the recurrent laryngeal nerve is carried back with it I think it is a dangerous procedure for any man to try to do routinely

Dr Thorek I want to stress what Dr Kent says There should be a reason for every surgical step Why expose the recurrent laryngeal nerve when you are trying to avoid it? It is unnecessary and entirely unsurgical to expose important structures unless definitely indicated.

Dr Jobe I was impressed with the men at Lahey's It is a dangerous maneuver, but they do it very deftly They do not pick it up, they just point to it I do not think it is necessary to expose it entirely

Dr Netherton I never expose the recurrent laryngeal nerve By exposing this nerve you are liable to create scar tissue

Dr Jaeger This morning when I showed the movies of the herniated intervertebral disc, where a fragment was removed, I made the remark that in order to protect that nerve I attempted to leave it in as nearly normal an anatomical position as possible I think if you look at any nerve as it runs through its anatomical parts, you will notice practically every nerve is well padded with fat The neurosurgeon has learned that this protective pad is a physiological protection Anytime you remove it and get even a small amount of hemorrhage, you are going to have scar formation and adhesions and traumatic neuritis I am sure that is true of all nerves The more neurosurgery I do, the less often I recommend exploring traumatized nerve trunks I should feel, from a neurological point of view, that uncovering the nerve would be hazardous

Dr Bunten I was trained as a neurosurgeon at Rochester I then moved to Detroit and there practiced neurosurgery While there a case came under my observation It was published under the title "Neurolysis of a Facial Nerve After Ten Years Inclusion Within the Scar Tissue, Operation with Returning Function" In doing a mastoid operation, the surgeon had made his incision a little too low After the operation the child lost the function on that side of the seventh nerve It remained that way for ten years In testing out the function of the nerve we felt there was some function, and that the nerve probably was not divided So we explored and found it reduced to the size of a thread for the distance of one-half inch The nerve was not injured in any other way, but had been pulled to make it of this diameter The previous operation had destroyed the normal protective structures and had formed scar tissue Six months following this second operation the child was able to use that side of the face I agree that it is best not to expose the recurrent laryngeal nerve If you operate and stay *definitely* in the capsule there is no need for nerve exposure

Dr Stuck I would like to give one more case to prove this point. This refers to the popliteal nerve A patient of mine had a small tumor on it which had limited the movement in her toes After very careful dissection of the tumor, the patient was able to move the toes as soon as she awakened We must deal gently with nerve tissue

Dr Barnard announced that questions relating to his operation, arthroplasty of the knee, would be answered by Dr Albee

Dr Bancroft Why do some patients get relief from sacroiliac pain by manipulation?

Dr Albee I believe that sacroiliac cases, low back pain caused by myofascitis, are due to old adhesions This is why the chiropractors are flourishing They break up these adhesions in their manipulations

Dr Haig If an injury is present, why is it that the patient will often get relief from a chiropractor immediately?

Dr Albee That depends on what the injury was Myofascitis can develop for months without any symptoms, then a person can reach for something or pick up something, and immediately be seized with pain That is the myofascitis coming to the fore, not an injury

Dr Grimm Do you often use a sacroiliac belt?

Dr Albee I have failed to find a method of sacroiliac relaxation that is satisfactory This myofascitis, a word I coined myself, often cannot be aided by a belt However, I often do recommend a belt, together with good massage

AFTERNOON SESSION

The afternoon session, which was presided over by Dr George H Gillen, opened with Dr Thorek's presentation of "Electro-Surgical Obliteration of the Gallbladder as a Means of Reducing Mortality—A Report of 1117 Cases Dr Thorek presented this operation, which he originated, in contrast to the classical method of cholecystectomy The mortality in the classical type of operation is often as high as ten per cent, while the mortality in the Thorek operation is one third of one per cent The evil effects of drainage required by the classical method were stressed, in contrast to the fact that no drainage is required when the gallbladder is obliterated by electrosurgical means

The second speaker of the afternoon was Dr Fred H Albee who spoke on "Arthroplasty of the Elbow" and "Arthroplasty of the Knee" illustrating both procedures with motion pictures He listed those conditions which were favorable and those which were unfavorable to arthroplasty and showed motion pictures of patients who had recovered from their stiff joints and were able to use them freely

At 4 P M Dr Frank I Terrill spoke on "Trends in Thoracic Surgery" and showed a number of illustrative slides He spoke first of the surgery necessary in tuberculosis then of that required in bronchiectasis and in bronchogenic carcinoma

Dr Charles H Arnold closed the afternoon meeting with a talk on "Splanchnic Anesthesia" Doctors are still searching for the ideal anesthesia, and although remarkable advancement has been made in anesthesia there is still much to be desired Splanchnic anesthesia is very satisfactory for use in certain types of operation particularly in surgery of the upper abdomen and especially in operations on older people It tends to eliminate pulmonary complications, strain on the kidneys acidosis and the undesirable period of narcosis Dr Arnold then described the methods of producing splanchnic anesthesia

EVENING SESSION

After a buffet supper at 6 30, the evening meeting opened with an enjoyable program by Dr Bunten (F A C S, F I C S) of Cheyenne, who is a gifted vocalist Dr H A Black of Pueblo presided Before presenting the speakers, he thanked the Denver men for their efforts in arranging the meeting, and reminded the audience of the meeting to be held in Mexico City at the invitation of the Mexican government. Dr George S Foster then spoke on "Cancer: Where Are We Going?" He stated that he selected this subject because he lives in the cancer nest of the world, New England There is a higher cancer incidence there than any other place, 10 per cent of all cancer of the United States is in New England, which has only one-fifteenth of the population Therefore, there is 50 per cent more cancer in New England than in other parts of the country.

The last speaker was Dr. Albee, who talked on "The Bio-Physiological Considerations in the Treatment of Ununited Fractures." He spoke of experiments wherein it was impossible to keep the fractures of a laboratory animal from healing He stressed the desirability of using a living bone peg in place of a nail or wire to hold an ununited fracture in place, illustrating by a motion picture the method he has developed of making these living bone pegs and inserting them into the ununited fracture

An approximate total of three hundred men attended the various meetings

Southern California Guild Meeting

The first Post Graduate Assembly of the Southern California Chapter of the International College of Surgeons was held at Los Angeles April 21 and 22 Dr. J David Beatty is president of the Southern California Chapter and Dr Alfred E Gallant is secretary

The meeting on Monday, April 21, was held in the auditorium of the Queen of Angels Hospital from 2 to 5 P M After introductory remarks by Dr J David Beatty, president, and Dr George S Foster (Manchester, New Hampshire), moderator, the following papers were read

Pre- and Postoperative Care in Gastric Surgery, Drs. Walter J. Holleran and J Reagan

Osteomata of the Skull (lantern slides), Dr Gilbert Roy Owen.

Experiences with the Use of Silk Sutures in General Surgery (lantern slides), Dr Ralph Byrne

Some Considerations in the Treatment of Hernia, Dr. Charles H Arnold, Lincoln, Nebraska.

A New Method of Mastopexy (motion pictures), Dr. Josif Ginsburg.

Schaul Therapy of Bladder Tumors (motion pictures), Dr Eugene Hoffman

A paper by Dr. Fred H. Albee

The Choice of Anesthetic Agent and Method of Application, Drs Charles F. McCuskey and Ernest H Warnock.

The morning meeting on Tuesday, April 22, was held from 9 A.M to 12 noon in Ward 3000, Los Angeles General Hospital, Unit 1. Ward rounds were followed by presentation of cases and a dry clinic Dr Fred H Albee acted as moderator.

The afternoon session, 2 to 5 P.M., was again held in the auditorium of the Queen of Angels Hospital, Dr. Charles H. Arnold acting as moderator Papers were presented on the following subjects:

Space-Occupying Lesions About the Spinal Canal and Their Relation to Low Back and Sciatic Pains (motion pictures), Dr Rupert Raney

Differential Diagnosis of Spinal Cord Tumors in Relation to Internal Medicine, Dr Leo J Adelstein

Uterine Malignancies; Fundus vs Cervix, Dr. Wilburn Smith

Cancer. Where Are We Going? Dr George S Foster.

Geriatric Surgery. Dr E Forrest Boyd

Paper by Dr. J. Madison Greer (Phoenix, Arizona).

Some Thoughts in Relation to Peripheral Vascular Diseases, Dr Leo M Burger.

History and Aims of the International College of Surgeons Remarks by Drs. Foster and Arnold Closing remarks by Dr Albee.

A dinner meeting concluded the program

Montana Guild Meeting

The second meeting of the Montana Guild of the International College of Surgeons was held at Great Falls on April 25 and 26 with Drs Albee, Arnold and Foster as guest surgeons The meeting was attended by forty-nine surgeons from Montana and other nearby states

The executive session of the Montana Study Guild was held on the afternoon of April 25 and resulted in the adoption of a constitution and by-laws in conformity with the constitution and by-laws of the United States Chapter of the International College of Surgeons Elections were held in which Dr C H. Fredrickson of Missoula was named president, Dr. John R Vasko of Great Falls vice-president, and Dr. J C MacGregor of Great Falls secretary-treasurer. Following the meeting golf was enjoyed and, later, dinner at the Country Club After dinner Dr. C. H. Fredrickson gave a very masterful address on "The Surgeon in the Defense Program' This was followed by a social evening at the Hotel Rainbow.

The scientific session opened on the morning of April 26 at the Columbus Hospital. Operations were performed by Drs. Albee and Arnold and several local surgeons. Of particular interest was the arthroplasty demonstrated by Dr. Albee on a patient who had hitch-hiked from Oregon to attend Dr. Albee's clinic. He also operated on an old ununited fracture of a hip, with favorable prognosis.

Dr. C. H. Arnold's demonstration of fascial tr[illegible]plants in an inguinal hernia operation was [illegible]ed with much favorable comment. During the m[illegible]ing clinics, the hospital served coffee and refresh[illegible]nts. Luncheon at the Hotel Rainbow was fo[illegible]wed by free discussion of the morning surgery. [illegible] P M a dry clinic was conducted by Dr. Alb[illegible]. An overabundance of material had been assem[illegible] parts of Montana. Much appreciation for the untiring efforts of Dr. Albee and the clear manner in which he presented the cases. Following the clinic, Dr. George S. Foster of Manchester, New Hampshire, gave an interesting discussion on cancer.

At 6 P.M. a banquet was held at the Hotel Rainbow. Drs. Albee, Arnold and Foster responded to toasts of toastmaster Fred Attix. The banquet was concluded with the initiation of Dr. Albee into the Montana Order of Cowboys and he was presented with the usual emblem. The meeting was from every point of view a great success.

Nebraska Guild Meeting

The third annual meeting of the Nebraska Guild was held in Lincoln on April 30.

Dr. Fred H. Albee of New York City, Dr. J. Rudolph Jaeger of Denver, Colorado, Dr. E. C. Henry of Omaha, president of the Nebraska Guild, and Dr. George S. Foster of Manchester, New Hampshire, took an active part in the program. Dr. Harry H. Everett of Lincoln was general chairman.

During the forenoon operative clinics and scientific demonstrations were held in four operating rooms and two delivery rooms at Saint Elizabeth's Hospital. Dr. Albee operated on an ununited fracture of the tibia, demonstrating his bone graft operation. Luncheon was served at the hospital.

The afternoon was devoted to discussions by guest surgeons. Dry clinics were well attended. Dr. Henry led the discussion on the operative work of the morning and Drs. Jaeger, Albee and Everett gave very interesting analyses of cases presented.

The dinner at the Cornhusker Hotel was attended by sixty-five surgeons. Immediately following, a meeting was held in the Lancaster County Medical Society Auditorium, to which the members of the Lancaster County Medical Society were invited. Dr. Jaeger presented colored motion pictures with a discussion of treatment of head injuries, and Dr. Albee presented colored motion pictures and a lecture on ununited fractures.

A total of about one hundred and twenty-five attended the meetings.

INTERNATIONAL ASSEMBLY IN MEXICO

BY INVITATION OF THE MEXICAN GOVERNMENT

Members, Fellows, their families and friends who are contemplating traveling to Mexico for the next International Assembly, to be held in Mexico City, Mexico, from August 10 to 14, 1941, may obtain information about transportation facilities, special Assembly train arrangements, etc., by addressing Dr. Max Thorek, International Secretary of the International College of Surgeons, 850 West Irving Park Blvd., Chicago, Illinois.

NEWS ITEMS

Newly Elected Secretary of the Scientific Assembly

GEORGE H. GILLEN, M D [illegible] C S, F I C S.

Dr George Hamilton Gillen of Denver, Colorado, was elected secretary of the Scientific Assembly of the United States Chapter of the International College of Surgeons at the meeting of the Executive Council of the United States Chapter held in Philadelphia on May 24 and 25. This important post has been held until now by the indefatigable Dr Charles H. Arnold of Lincoln, Nebraska, who was unanimously elected Executive Secretary of the United States Chapter of the International College of Surgeons The tremendous amount of work which Dr. Arnold is doing in his capacity of Executive Secretary of the Chapter created the necessity of relieving him of the burdens of the secretaryship of the Scientific Assembly, in itself an undertaking entailing much responsibility.

George Hamilton Gillen was born in 1892 and graduated from the Vanderbilt University School of Medicine in 1915. His practice is entirely limited to surgery He is a Fellow of the American College of Surgeons and of the International College of Surgeons.

Dr Gillen, besides being an excellent surgeon, has endeared himself to many friends by his genial personality *and admirable character He is attending surgeon* at St Luke's Hospital, Denver, and on the associate staff of the Children's Hospital and Presbyterian Hospital of the same city He was chairman of the mid-winter Postgraduate Clinic of the Colorado State Medical Society and chairman of the program committee of the Guild Meeting of the International College of Surgeons recently held in Denver He was also a delegate to the meeting of the Colorado State Medical Society He is endowed with proved and mature executive ability

Besides his professional activities, his work in civic activities is notable He is chairman of the Health and Safety Committee of the Boy Scouts of America (Denver chapter), chairman of the Committee for the Aid of Underprivileged Children, Kiwanis of Denver and other worthwhile organizations.

With his election, the United States Chapter feels assured of a worthy successor to the retiring dynamic incumbent.

Dr. Wilbur Resigns as President of Stanford University

Dr. Ray Lyman Wilbur, who observed his twenty-fifth anniversary as president of Stanford University on January 19, will retire at the close of the present academic year. Dr. Wilbur became president of Stanford in 1916, having previously been professor of medicine and dean of the Medical School.

Dr. Wangensteen [illegible]arded *$1,000 Prize*

The John Scott [illegible] and the *sum of $1,000* given by the City [illegible]hiladelphia for "outstan[illegible] achievement in me[illegible] science," h[illegible] to Dr. Owen H[illegible]angensteen, p[illegible] and head of the [illegible]partment, U[illegible]sota Medical S[illegible], *in recogni*[illegible] the developme[illegible] a *suction si*[illegible] acute intestin[illegible]*bstruction.*

Dr. Conant Returns from London

Dr. James Bryant Conant, president of Harvard University, returned on April 15 after two months in England as head of the mission sent by President Roosevelt to make "first-hand observations of recent English scientific research and experience." While in England, he received the degree of doctor of science from the University of Oxford and was entertained at a luncheon given at Burlington House by the president and fellows of the Royal Society.

During his visit, Dr. Conant was made freeman of Southwark, where John Harvard, founder of the university, was born, in recognition of "his eminent work as president of Harvard; his leadership in the United States of America in the cause of liberty and justice, and the invaluable assistance rendered by him to the British Empire while engaged in defending the cause of freedom."

Polish Medical School in London

The *London Times* states that the University of Edinburgh has established a Polish School of Medicine. This will be staffed by professors and teachers now serving with the Polish Army in Great Britain and by professors of the university faculty of medicine in such subjects as may not be represented among the Polish professors. A statement issued by the university reads in part: "The Polish Forces in this country include a considerable number of medical officers of whom many are men of high academic standing who have held important teaching and research appointments in Poland. In addition, there are other medical graduates of Polish universities who have lost for the present almost all opportunities of maintaining the standards of their professional skill. There are also numbers of Polish medical undergraduates in this country, and the value of their studies will be seriously affected unless something is done to mitigate the unfortunate situation in which these men now find themselves."

Physicians' Art Club Exhibit

The fourteenth annual exhibition of the New York Physicians' Art Club will open April 26 at 6 East Fifty-seventh St., Manhattan, under the auspices and for the benefit of the British War Relief Society, Medical Aid Department. This is the first time that the New York Physicians' Art Club has given an exhibition as a benefit, and it is expected that the worthy cause will result in greater participation than ever by the members and visitors. On the opening night there will be a reception with speakers, Scotch pipers and refreshments, with a preview for the press and invited guests. Pictures and sculpture marked for donation will be auctioned at the close of the exhibition for the benefit of the British War Relief Society. Works previously exhibited may be submitted, and the usual limitation to four has been waived for this occasion. Dr. Percy Fridenberg is secretary-treasurer of the club.

Board on Blood and Blood Substitutes

An Advisory Board on Blood and Blood Substitutes has been established by the Committee of Revision and the Board of Trustees of the Pharmacopoeia of the United States to cooperate with and report through the Sub-Committee on Biological Assays. This board is made up of the following members: Dr. Perrin H. Long, Johns Hopkins University Medical School; Dr. Sidney O. Levinson, Michael Reese Hospital, Chicago; Dr. C. P. Rhoads, Memorial Hospital, New York City; and Dr. Max M. Strumia, Bryn Mawr Hospital.

Child Surgery at Harvard

Dr. William E. Ladd, clinical professor of surgery at Harvard Medical School and chief of surgical services at the Children's Hospital, Boston, has been appointed the first William E. Ladd professor of surgery, a chair which has been permanently endowed by his friends and associates. This is the first Harvard professorship devoted exclusively to child surgery.

$16,000 in Awards to 4 Scientists

The American Academy of Arts and Sciences announces the first award of the septennial prize of the Amory Fund to four scientists for their contributions to the treatment and cure of diseases of the genito-urinary system. The recipients are Dr. Joseph F. McCarthy, professor of urology, New York Polyclinic Medical School and Hospital, New York; Carl R. Moore, Ph.D., professor of zoology, University of Chicago; Dr. Hugh H. Young, professor of urology, Johns Hopkins University School of Medicine, Baltimore; and a European scientist whose name is withheld for the present because he lives in a country dominated by Nazi Germany. The prize money, which is the income from a fund established in 1912 by the late Francis Amory of Beverly, Massachusetts, amounts to nearly $16,000 and will be divided equally among the four scientists, that for the European recipient being held in trust for him in this country. The award covers contributions made since 1933. Dr. McCarthy was honored for his development of technical instrumental procedures for examination, diagnosis and treatment by way of the urethra, without external incision, of certain diseases of the bladder, prostate and related organs. Dr. Moore's investigations concerned the physiology of the male reproductive tract, especially as it is influenced by the hormonal secretions of the male sex gland. Dr. Young was cited for the operation of total prostatectomy by the perineal approach, which he devised and perfected for the relief of obstruction to the outlet of the urinary bladder caused by cancer of the prostate gland.

St. Alphonsus Hospital Dedicated

The Sisters of the Sorrowful Mother opened the new St. Alphonsus Hospital in Port Washington, Wisconsin, on April 26. At the open-house ceremony, John H. Kaiser, mayor of Port Washington, spoke and the institution was thrown open to public inspection. The formal dedicatory program consisted of an address by the Hon Edward Gehl, governor of Wisconsin Dr. William J. Carson, F.I C S., spoke on the science of surgery; other addresses were given by Dr. F. W Lehman, president of the Washington and Ozaukee Counties Medical Association, and Rev. Peter Hildebrand, pastor of St Mary's Catholic Church of Port Washington. The following have been appointed to the consulting staff: Dr. W. J Carson, F I C.S., surgery; Dr R. W. Roethke, F.I.C S., obstetrics: Dr. Norbert Enzer, medicine; Dr. L D Smith, F.I C.S., orthopedics; and Dr. M G. Peterman, pediatrics.

Meetings

The National Gastroenterological Association held its sixth annual convention in New York City, April 13-16, at the Hotel Commodore, under the presidency of Dr. Anthony Bassler Subjects discussed at round table conferences included· pathogenesis of cholelithiasis, Dr. G. M. Russell, Billings, Montana, presiding; criteria in the differential diagnosis of ulcers and carcinoma of the stomach, Dr. Robert J. Bach, Milwaukee, Wisconsin, presiding; sigmoidoscopy, Dr. Charles M. McClure, Boston, presiding, and new forms of medical therapy of ulcers of the stomach and duodenum, Dr. F. H Voss, Kingston, New York, presiding. Dr. Henry Kendall, New York City, served as chairman of the program committee.

Dr James B. Herrick, professor emeritus of medicine at Rush Medical College, Chicago, delivered the fifth Christian Fenger Lecture of the Institute of Medicine of Chicago and the Chicago Pathological Society at a joint meeting held on Monday evening, February 10. His subject was "Christian Fenger as I Knew Him, 1885-1902—A Study in Personality"

Dr. Nathan Smith Davis III was re-elected president of the Chicago Academy of Sciences at the eighty-fourth annual meeting on April 14. Other officers were elected as follows Tappan Gregory, first vice-president; Dr. Verne O. Graham, second vice-president, and Alton S. Windsor, secretary. John Nash Ott, Jr, was elected a member of the Board of Trustees; Dr. Charles A Shull, of the University of Chicago, and Dr. L Hanford Tiffany, of Northwestern University, were elected to the Board of Scientific Governors. The speaker of the evening, Dr A. C Ivy, professor of physiology and pharmacology at Northwestern University Medical School, was elected an honorary member of the academy. Dr Ivy's address was entitled, "The Gastrointestinal Hormones and Their Uses."

The Society of Medical Officers of Health, London, gave a luncheon on February 21 in honor of Surgeon-General Thomas Parran, head of the U. S. Public Health Service Dr F. T. H. Wood, president of the society, presided. The Lord Mayor of London, medical officers of health, and representatives of local authorities and of the Ministry of Health attended the luncheon Dr. George Buchan, who took the chair after the luncheon, proposed the health of Dr. Parran, and Dr. Parran replied A private luncheon was given to Dr. Parran by the British Medical Association, at which Dr J. E. Gordon, United States liaison officer with the Ministry of Health, Dr. John R Mote, medical adviser to the American Red Cross Committee in London, Sir Wilson Jameson, chief medical officer to the Ministry of Health, and the principal officers and officials of the association were present.

Dr. Anthony Bassler of New York City delivered an address before the Buffalo Academy of Medicine on February 26 on pathological and clinical aspects of cholecystitis.

At the annual meeting of the American Academy of Orthopedic Surgeons held in New Orleans on January 16, the following officers were elected: Dr. Carl E. Badgley, Ann Arbor, Michigan, president; Dr. Herman C. Schumm, Milwaukee, Wisconsin, vice-president, Dr. Eugene Bishop Mumford, Indianapolis, Indiana, treasurer; and Dr Reford L. Diveley, Kansas City, Missouri, secretary.

Awards

Dr Wendell M. Stanley of the Rockefeller Institute for Medical Research, Princeton, received the gold medal of the American Institute of the City of New York at a dinner in New York, February 6 The award was given to Dr Stanley in recognition of his work in "crystallizing the virus of tobacco mosaic, a feat which has opened up new fields of research, given birth to new ideas about the nature of important disease-producing agents and enlarged the human understanding of life"

Dr. Catherine McFarland of Philadelphia received the ninth annual Adam P Gimbel award for the outstanding woman of 1940. The sixty-three-year-old physician, who has been practicing for forty years, founded the Women's Clinic to study cancer control.

The Committee on Scientific Research of the American Medical Association has made grants-in-aid as follows. Everett L. Evans, Medical College of Virginia, surgical shock; E. E. Cahn-Bronner, University of Illinois College of Medicine, bacterial metabolism; H. O. Burdick, Alfred University, Alfred, N. Y., effect of desoxycorticosterone on pregnancy; M. R. Todd, University of Oregon Medical School, physiologic effects of canine distemper vaccine; Roled K. Meyer, University of Wisconsin, antihormones.

Appointments

Dr. Paul C. Bucy, assistant professor of neurosurgery at the University of Chicago, has been appointed associate professor of neurology and neurological surgery at the University of Illinois College of Medicine, Chicago. Dr. Bucy succeeded Dr. Percival Bailey as chief neurological surgeon at the University of Chicago when Dr. Bailey joined the staff of the University of Illinois in September, 1939. Both are now associated with Dr. Eric Oldberg, professor and head of the department of neurology and neurological surgery at the new Neuropsychiatric Institute which has just been completed for the University of Illinois at Chicago.

Dr. Charles Vezina, professor of clinical surgery of the faculty of medicine of Laval University, Quebec, has been appointed dean of the medical school, to succeed the late Dr. P. Calixte Dagneau.

Dr. J. M. Yoffey, lecturer in anatomy at the University College of South Wales and Monmouthshire, has been appointed to the chair of anatomy in the University of Bristol, succeeding Prof. S. E. Whitnall, who retires at the end of the current session.

Personals

Dr. Manuel A. Manzanilla, president of the Committee of Organization of the International Assembly of the International College of Surgeons, has been unanimously elected a Corresponding Academician of the Academy of Medical, Physical and Natural Sciences of Havana, Cuba. The International Council of the College congratulates Dr. Manzanilla on this well-merited honor.

Dr. Ellen C. Potter, medical director of the New Jersey Department of Institutions, and formerly Pennsylvania State Secretary of Welfare, has been elected to succeed Dr. Chevalier Jackson as president of the Woman's Medical College of Pennsylvania.

Dr. Ernst Th. von Bruecke, former professor of physiology in the University of Innsbruck, was the guest of the University of Oregon during the week of April 4 to 11. He lectured before Sigma Xi on "Fatigue and Recovery in Peripheral Nerves" and before the faculty on "Physiological Tendencies to Stabilize the Appearance of the Environment."

Dr. Herbert S. Gasser, director of the Rockefeller Institute for Medical Research, received a Doctorate of Science from the University of Wisconsin at its eighty-eighth commencement on June 23.

Prof. P. Sfameni, director of the Gynecologic Clinic of Bologna, Italy, has in conjunction with his wife donated 2,000,000 lire to the University of Bologna, with the stipulation that every five years a prize of 50,000 lire be given for the best work in obstetrics.

Prof. Herman Matti, who in 1938 succeeded the late De Quervain as director of surgical technic in Berne, Switzerland, resigned his position April 1, "for reasons of health."

Dr. Alexis Carrel arrived on March 15 in Unoccupied France, where he plans to make a study of the effect of food deficiencies on human health. He plans to remain in France for about six weeks. He will then go to Spain to continue his survey there.

Dr. William Seaman Bainbridge, treasurer of the International College of Surgeons, has been elected president of the Academy of Physical Medicine.

Correction

In the article "The Significance of Nutritional Deficiency in Pregnancy," which appeared on page 147 of the April issue of the Journal, the correct dosage of vitamin C in the minimum optimum diet of pregnancy should be 3,600 International Units.

OBITUARIES

William H. Walsh, M.D.

THE medical profession and the field of hospital administration have experienced an irreparable loss in the passing of William Henry Walsh. His great achievements in the development of hospital service during the past twenty-five years will be long remembered. His efforts as a sanitarian, a physician, a hospital administrator and consultant have been seldom equalled and never surpassed in this generation.

His services to his fellow men in times of peace were in consonance with the value and importance of his military service. He was a veteran of both the Spanish-American and the First World War. A private in the army at the turn of the century, he became Lieutenant-Colonel and Commanding Officer of Base Hospital No. 58 with the A E F. in Europe.

He was Chief Sanitary Officer in Manila at the beginning of the American occupation He resigned that position to enter the field of medicine, and graduated from the Medico-Chirurgical College of Philadelphia. Upon graduation he became administrative resident of Old Blockley, and in the course of the next few years superintendent of the Contagious Hospital and the Children's Hospital in Philadelphia He was the first full-time executive secretary of the American Hospital Association, resigning to enter military service during the World War He was on the Surgeon-General's staff until he took command of the base hospital in Europe

Upon his retirement from military service he entered upon a career as a hospital and sanitary consultant. His work called him to many countries in Central and South America, as well as to Canada and the United States He was internationally recognized both as an authority on hospital construction and administration and as a sanitary expert He was appointed executive secretary of the American Hospital Association a second time and left that position in 1928 to devote his full time to work as a hospital consultant.

He was able, conscientious and thoroughly competent. Steadfast in his friendships, kindly and considerate of his associates, he was both a leader and a teacher. His contributions to the advancement of hospital operation will endure long after the memory of his work has dimmed Like so many other able men, his only regret was that he could not live to accomplish all the things he had planned for a busy life

WILLIAM H. WALSH, M D

B C C

Prof Augusto Ducrey, discoverer of the bacillus of Ducrey, and one of the noted dermatologists on the European Continent, died December 27 in Rome at the age of eighty years.

Dr. Karl Frederik Wenckebach, since 1929 professor emeritus of medicine at the University of Vienna, and known for his pathological and clinical studies on diseases of the heart and circulatory system, died recently at the age of seventy-seven.

Dr. Claude Adelbert Burrett, president of the New York Medical College and Flower and Fifth Avenue Hospitals, died on March 3 at the age of sixty-two.

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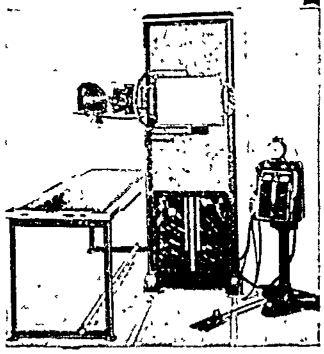

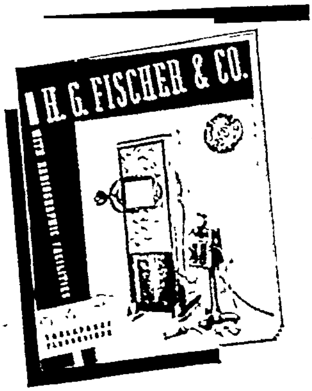

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Lv. St. Louis	5:30 PM	Aug. 6
Lv. Memphis	10:30 PM	Aug. 6
Lv. Little Rock	1:50 AM	Aug. 7
Lv. San Antonio	4:45 PM	Aug. 7
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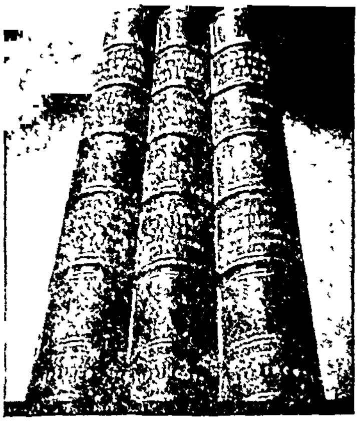

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The Journal of the
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Volume IV FEBRUARY 1941 *Number* 1

Plastic Epiploitis (Epiploitis Plastica)

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PLASTIC epiploitis is a chronic inflammation of a part of the greater omentum. It results from a chronic mechanical irritation, as encountered in an umbilical or inguinal rupture, or any other external or internal hernia containing a part of the omentum.

Torsion in the hernial sac or intermittent compression by the hernial ring or from the outside (truss, corset) causes an increasing fibrosis of the omentum. This type of epiploitis is called spontaneous. A second form of plastic epiploitis follows certain operations in which a partial resection of the omentum has been performed. At the site of the ligatures a proliferative inflammation ensues, giving rise to definite symptoms. The inflammation in the omentum may be purely a reaction to a surgical procedure, such as resection of clumpy omentum present in a hernial sac. Or a low-grade infection may establish itself in the omentum by transmission from an adjacent organ (appendix, gallbladder). Following an appendectomy, the omentum becomes attached to the inverted stump of the appendix or somewhere in its vicinity. Intermittent pull or torsion of this adherent piece of omentum eventually gives rise, possibly after years, to symptoms simulating indigestion or even intestinal obstruction.

At the end of a cholecystectomy, a piece of omentum is sometimes put between the gallbladder bed and the ligamentum hepatoduodenale to prevent adhesions. This omentum may become chronically inflamed and symptoms simulating intermittent chronic dyspepsia may result.

The postoperative form of plastic epiploitis was first described by Lucas Championière[1] (1895). He observed it after hernia operations in which some omentum had been resected. Later Schnitzler[2] and Braun[3] published similar observations. Von Oppolzer in an exhaustive monograph stressed the importance of this rather rare clinical picture with uniform pathological findings as its cause.

Desbonnet[4] and von Oppolzer[5] added another form of plastic epiploitis, resulting from hemorrhage or thrombosis in the omentum following a heavy blow to the abdomen. They called this "traumatic epiploitis." Desbonnet reports the case of a girl who suffered a severe blow (kick) to the abdomen. Several days later the girl was operated upon for acute appendicitis. A bluish, greatly thickened omentum (hematoma) explained the vomiting and the elevated temperature (101.5 F.). Von Oppolzer's patient was a man, fifty-two years of age, who three weeks previously, while carrying a load on his back, suddenly fell forward on his stomach. He complained of severe pain in the back. A movable tumor the size of a hen's egg was palpable in the left side. Laparotomy revealed a hematoma in the omentum.

SPONTANEOUS PLASTIC EPIPLOITIS

A piece of omentum steadily or intermittently lodged in a hernial sac may undergo increasing fibrosis as a result of chronic mechanical irritation. There may be no *symptoms. If the ring at the base of the* hernia is narrow, short spells of indigestion may occur which are overlooked. Temporary strangulation within the hernial sac may ensue, owing to vascular disturbances in the omentum and edema formation. Indigestion may be present, associated with local pain. If the content in the sac is liberated, the symptoms subside. Parumbilical and multilocular umbilical hernia in obese persons will often bring about spells of transitory local pain with indigestion. If the pains persist and become more severe, the picture of strangulated hernia necessitates operation. Edematous omentum with free fluid in the hernial sac is found. More advanced vascular changes with bloody extravasation and thrombosis may even be encountered. Part of the omentum may be adherent to the wall of the hernial sac. This might explain why the same piece of omentum always slips into the sac. Chronic mechanical irritation with intermittent vascular obstruction will result in a fibrous or clumpy omentum.

Clinically we find attacks of pain accompanied with nausea and vomiting. For years these may be transitory. With every subsequent spell they may increase in severity, finally necessitating surgical intervention.

In one long-standing case of a hernia of the linea alba (parumbilical hernia), with frequent vague symptoms of indigestion, relief was brought about by resection of protruding omentum and hernioplasty. Inspection of the stomach excluded pathology (ulcus) in its wall.

Umbilical hernia of years' standing in very obese persons commonly gives the picture of plastic epiploitis.

Also inguinal hernias, mostly of the scrotal type, may manifest themselves by repeated attacks of indigestion, nausea, vomiting and local pain. Clumpy, fibrous omentum, either free or adherent to the wall of the hernial sac, is found at operation to be the causative factor.

Inasmuch as the omentum readily plasters itself in a protective manner against any localized inflammation within the abdomen (appendix, gallbladder, tube and ovary) or over an ulcerative process (stomach, duodenum), a proliferative chronic inflammation will result with pseudotumor formation. At times the clumpy fibrous omentum is not in direct contact with the primary focus of infection. Considering the frequency of acute inflammations within the abdominal cavity, evidence of plastic epiploitis is rare. Very often the omentum becomes acutely inflamed, due to contact with the primary focus of infection. After the primary focus is eliminated, either by conservative measures or by surgery, the inflammatory changes in the omentum regress and disappear if not too advanced. Except for minor scarring, no chronic stage of inflammation persists. The possibility of chronic plastic epiploitis must be borne in mind. It will give the clue to many vague abdominal symptoms.

Chronically inflamed omentum lying within the abdominal cavity can become twisted, simulating an abdominal tumor. It is usually found on the same side as an existing hernia, at the level of the navel or above. The twisted omentum is edematous, firm, and at times discolored, becoming bluish like an infarct. Free fluid is present in the abdominal cavity. The clinical symptoms associated with such a condition are very acute and fulminant, simulating a bowel obstruction.

A modification of this pathological condition due to thrombosis following torsion is an epiploitis resulting from embolism of the omental arteries or thrombosis of the corresponding veins. This is a very rare occurrence. The sudden onset and the acuteness of the clinical picture are characteristic. A primary cardiac condition must be demonstrable. Hernia or torsion of omentum has to be excluded. Other infarcts in spleen or coronary vessels will help in the diagnosis.

A foreign body (fish bone, bone spicule, needle) can slowly penetrate the intestinal wall without many clinical symptoms. If it becomes embedded in the omentum, it will give rise to chronic or plastic epiploitis.

EPIPLOITIS FOLLOWING OPERATION

Less frequent than the spontaneous form of plastic epiploitis is the postoperative one. In the course of an operation, fibrous omentum is resected to eliminate chronic inflammatory changes in it. In another group the omentum is interposed as a protective measure at the place where an inflamed organ (appendix, gallbladder) has been removed.

As prototype of the first group hernioplasty must be mentioned. The abstract of a personal experience which initiated the study of this clinical entity follows:

H.K., male, 58 years of age, suffered for years from a bilateral scrotal hernia. The truss which he wore did not retain the hernia Except for occasional pain of short duration he had no complaint. On September 20, 1939, after carrying a bucket of water, he suddenly experienced a severe pain in the right groin and felt nauseated. The pain became general all over the abdomen Under rest in bed and sedation, the pain subsided On September 21, he returned to work. Toward evening the pain in the right groin recurred, with nausea. On September 22, he stayed in bed. The pain persisted. Hospitalization was advised.

Examination revealed a muscular, well-nourished man with bilateral scrotal hernias. The content of the right hernia could not be completely reduced. The content of the left hernia was easily reduced. The hernial rings were wide with firm outlines on both sides.

At operation (September 27) shrunken fibrous omentum attached to the cord was found in the left hernial sac. This omentum was resected at its base before reduction. Hernioplasty (Halsted) concluded the operation. On the right side thickened omentum was found adherent to the wall of the hernial sac. It was freed by sharp dissection and resected. Halsted repair of hernia followed

At first the patient made an uneventful recovery. The wounds healed by primary intention. On the eighth postoperative day he suddenly complained of severe pain around the navel Abdominal distention became conspicuous He felt nauseated There was no elevation of temperature or pulse. Under local heat (infra-red light and atropin) the symptoms subsided. In the next two days patient had two similar attacks of several hours' duration Under short-wave treatments he made a complete recovery.

Resection of the omentum instituted a secondary epiploitis at the site of the ligatures. The reactive hyperemia of the short wave remedied the local inflammatory reaction.

Among 30 cases of epiploitis Braun[2] reported 21 observations following hernioplasty. Delore[6] reports two observations in 500 hernia operations. Championière[1] mentions two among 274 operations for rupture. Tuffier[7] observed it once in 600 hernioplasties. In some instances small abscesses were found around the ligatures in the remaining omentum, pointing to infected material. Silk usually causes less foreign body reaction than catgut. A constitutional factor which varies with the individual must be borne in mind as an additional agent for the resulting plastic epiploitis.

Even reposition of clumpy fibrous omentum can cause epiploitis (Schmieden[8]). In these instances a low-grade infection must have been present at first.

In addition to hernioplasty, plastic epiploitis not uncommonly follows appendectomy. The adherence of omentum to the cecum and appendix in acute appendicitis is a frequent finding at operation. After appendectomy part of the omentum may adhere to the stump of the appendix and remain there silent for years. In some instances this stretched omentum may give rise to vague symptoms of indigestion for short spells. For years no attention is paid to these attacks until the symptoms become more severe, culminating in a picture simulating intestinal obstruction.

Clinically, there exist indigestion with colicky pain, constipation, meteorism and singultus. Exacerbations with vomiting and abdominal rigidity may occur. The temperature is not elevated much. A slight leukocytosis may be present. Negative X-ray studies are important in differentiating from intestinal obstruction.

A mass, more or less movable, may be felt indistinctly. Only if occurring shortly after operation is the muscular rigidity such that palpation is unsatisfactory. Exploration is indicated and will clear up the picture, as illustrated in three personal observations.

CASE REPORTS

Case No. 1.—J.N., a nurse, 24 years, had an appendectomy for chronic appendicitis in April, 1935. Her recovery was uneventful. The menstrual history was unimportant. She was well until April 4, 1940, when she noticed a slight pain in the stomach region. On April 5 the pain recurred. It did not interfere with her work. In the evening of April 6, after work, the pain became very intense, with intermittent vomiting. She was hospitalized.

Examination.—Temperature 98 F. Pulse 80. Respiration 20. Hemoglobin 88 per cent. Red count 4,730,000. White count 18,000. Neutrophils 90 per cent (segmented). Lymphocytes 3 per cent. Urine: negative

Status localis.—The abdomen was not distended. Some muscular rigidity was elicited in the lower left quadrant. No masses were felt. Vomiting persisted. Pains were constant and severe with exacerbations at short intervals.

Operation.—Ethylene anesthesia was used. No free fluid was present in the peritoneal cavity. There was no injection of serosa. The jejunum was moderately distended and the ileum collapsed. The colon was moderately distended. Pelvic organs showed nothing of importance. Stomach and gallbladder showed no pathology. A piece of omentum was attached to the cecum and the adjacent lateral abdominal wall for 4 cm. in width. It was liberated by sharp dissection. The defect on the cecum was covered by serosa stitches. The thickened free end of the omentum was resected. The stumps of silk ligatures were covered with serosa stitches. Closure of the wound was made in layers after pouring 200 cc. of amfetin into the abdomen.

The patient made an uneventful recovery and has remained free of any symptoms ever since.

Case No. 2.—K.L., female, 43 years of age, a dietitian, had an appendectomy performed in 1920 with uneventful recovery. In 1932 she underwent a cholecystectomy. For the last four years she had spells of colicky pain in the right lower quadrant lasting several hours and repeating themselves daily. At times no spells occurred for weeks or even months. The menstrual history was unimportant. Short-wave and Elliot treatments were of no avail. From Christmas, 1939, the patient had steady pain, though most of the time she was not incapacitated. At times she had to lie down and apply heat to obtain temporary relief. There was no loss of weight.

Examination.—Temperature 98 F. Pulse 80. Respiration 20. Red count 5,070,000. Hemoglobin 94 per cent. White count 6,800. Neutrophils 68 per cent. Lymphocytes (small) 26 per cent. Urine: negative.

Status localis.—The abdomen was not distended. No muscular rigidity was present. There was tenderness to the right and below the navel. An indistinct mass was felt. Otherwise there was no abnormal finding.

Operation.—Operation was performed February 27, 1940, under avertin basal-ethylene anesthesia. No free fluid was found in the abdominal cavity. The right ovary was cystic. The right tube was thickened. Both were therefore removed. A piece of omentum was stretched out to the right lower quadrant and attached with broad base to the medial aspect of the cecum. The cecum was greatly distended. Sharp dissection of thickened granular omentum from this place of attachment was made. The raw surface on the cecum was covered with serosa. The thickened omentum was resected and the stumps covered with serosa. Amfetin 200 cc. was poured into the abdomen before closing the wound in layers. The patient made an uneventful recovery. All symptoms subsided.

Case No. 3.—A.R., female, a housewife, 36 years of age, had an appendectomy 14 years ago with an uneventful recovery. Ever since the operation she experienced occasional spells of distention of short duration. Expelling of gas would relieve symptoms. The menstrual history was irrelevant. On the evening of February 16, 1940, after a heavy meal, she felt uncomfortable. During the night the pain became more severe There were nausea and vomiting.

Examination.—Temperature 98 F. Pulse 80. Respiration 20. Red count 4,450,000. Hemoglobin 85 per cent. White count 9,100. Neutrophils 89 per cent. Lymphocytes (small) 10 per cent.

Status localis.—The abdomen was soft and not tender. There was nowhere muscular rigidity. No mass could be felt. Vaginal examination was negative. Under hot turpentine stupes and sedation (Trasentin) some relief was obtained for a matter of hours; then pain and vomiting returned.

Operation.—Operation was performed February 18, 1940, under ethylene anesthesia. No fluid was present in the abdominal cavity. The intestines were normal. A piece of omentum was stretched out from the middle line to the cecum and the adjacent lateral abdominal wall. It was liberated by sharp dissection. The thickened omentum was resected. The denuded area was covered with serosa. Patient made an uneventful recovery and has been free from symptoms ever since

In all these three patients the symptoms were basically identical. The pathology found at operation showed a plastic epiploitis following appendectomy. Resection of the pathological omentum remedied the conditions completely in all three instances.

In the course of inflammatory pelvic conditions and following gynecological operations, the omentum can become adherent to parts of the pelvis with resultant epiploitis (Hadra[9]). Many vague symptoms of dyspepsia, increasing to attacks of nausea, may be due to such adhesions. Additional pathology in the pelvis may obscure the picture and divert the attention at operation from an omentum which is chronically inflamed and adherent to some part within the pelvis. Hydrotherapeutic measures or diathermy, preferably short wave, will clear up many of these cases. When forced to resort to surgery, a study of the above cases following appendectomy might prove helpful. If the omentum is adherent to any part in the pelvis, it should be removed and recurrence prevented by resection of the fibrosed omentum.

Following operation in the upper abdomen, epiploitis is not so frequently encountered, unless the omentum has been fixed surgically into an abnormal location. An observation following cholecystectomy might illustrate this complication.

T.B., female, a stenographer, 27 years of age, had a cholecystectomy for cholelithiasis in January, 1935. No pathology of the stomach or duodenum was found. After an uneventful recovery the patient continued to complain of a "heavy" sensation in the stomach region. Belching was frequently experienced A "globus"-like symptom was present. Bowel movements were regular. Appetite was good only for certain foods. In February, 1936, the patient complained of fullness of the stomach. Food would not pass easily into the stomach. Various symptomatic remedies had no lasting effect. In May, 1936, an X-ray study of the stomach was made which revealed no pathology of the stomach.

In May, 1938, the patient still complained of heaviness in the stomach region. She looked well and kept her weight. Gradually the spells became less severe. Today the patient is free from symptoms Although not verified by operation, this case is cited as of possible help in similar observations following cholecystectomy. Instead of using omentum for covering the gallbladder bed, as in the above case, I now prefer a transplant from the falciform ligament, as advocated by Thorek.[10]

DIAGNOSIS

Spontaneous epiploitis can be present for years without causing symptoms, except for vague dyspepsia or anorexia of short duration. On the other hand, the symptoms may be severe from the beginning and simulate an acute obstruction of the bowel. The differential diagnosis is often very difficult. Exploratory laparotomy, which is indicated in the case with obstruction in question, will settle the diagnosis.

Also in *postoperative epiploitis* the clinical picture may be very vague until an acute exacerbation with no relief by symptomatic treatment necessitates operation. It may become manifest days, weeks or years after operation. If it takes a chronic intermittent course, proper diet without abnormal physical exertion may cause the symptoms to abate. A tumor, more or less movable, is sometimes felt rather indistinctly. If occurring shortly after operation, the concomitant muscular rigidity is such that palpation cannot be conclusive.

If the symptoms increase in severity, simulating acute bowel obstruction, exploration is urgent. The temperature is in most instances subfebrile. However, slight elevation may be present. Where a purulent infection is present, the temperature is elevated with remission. Leukocytosis is never marked and may even be absent. If present, it points toward an acute infectious process.

In very acute cases the preoperative diagnosis is acute appendicitis, volvulus, torsion of ovarian cyst or acute cholelithiasis. Even negative X-ray findings are not conclusive, inasmuch as we find the condition in early stages of the other acute surgical conditions.

THERAPY

Considering the variety in the clinical symptoms and their severity, the therapy cannot be uniform. Where the discomfort is only moderate and transitory, symptomatic treatment will diminish the distress.

In the cases occurring days or weeks after a hernioplasty or an appendectomy, conservative measures will suffice, namely: rest in bed; local heat (stupes, short wave). If the symptoms recur again and again or if the symptoms increase to a picture simulating ileus, exploratory laparotomy is indicated for exposure of the underlying pathology. Elimination of the causative factor is desirable, as illustrated in the cases reported above.

Resection of the inflamed portion of the omentum is the method of choice in most instances. In the literature, cases are reported where resection of the colon or small bowel became necessary because of extensive adhesive inflammation in the omentum. Where the condition of the patient does not justify such a drastic measure because of the extent of the involved intestine, a short-circuiting entero-anastomosis will give relief from the distressing symptoms.

SUMMARY

Plastic epiploitis is a clinical entity which arises from an inflammation of part of the omentum, spontaneously or as a sequela of an abdominal operation. The symptoms resulting from it vary from vague dyspepsia to acute intestinal obstruction.

The differential diagnosis is often very difficult. In most instances the preoperative diagnosis is acute appendicitis, volvulus, torsion of the ovarian cyst or acute cholelithiasis. Exploration reveals absence of these conditions. Thickened omentum, adherent somewhere in the abdomen, is found the causative factor. Resection of the pathological portion of the omentum results in cure.

REFERENCES

1 Championiere Lucas *Bull et mem Soc de chirurgiens de Paris* 24 195, 1898 *Quoted by von Oppolzer*

2 Schnitzler, J Ueber Epiploitis im Anschlusse an Operationen, Wien klin Rundschau vol 59, 1900

3 Braun, H Ueber entzundliche Geschwulste des Netzes, Arch f klin Chir 63 378, 1901

4 Desbonnet Gaz d hop, vol 39, 1930 Quoted by von Oppolzer

5 Von Oppolzer R Ueber Epiploitis plastica, Arch f klin Chir *195* 489 513, *1939*

6 Delore Quoted by von Oppolzer

7 Tuffier, M *Bull et mem Soc* de chirurgiens de Paris *24* 149, 1899 Cited by von Oppolzer

8 Schmieden Cited by von Oppolzer

9 Hadra, B L *On Omental Tumors Due to Adhesive* Inflammation, Ann Surg 14 36, 1891

10 Thorek Max Electrosurgical Obliteration of Gallbladder without Drainage, Report of 471 Cases, Tr Internat Coll Surgeons 1 173, 1938

RÉSUMÉ

Epiploite plastique

L'epiploite plastique est une entité clinique qui dérive d'une inflammation d'une partie de l'omentum, spontanément ou après opérations addominales. Les symptômes qu'en résultent varient d'une vague dispepsie à une acute obstruction intestinale.

Le diagnostique differentiel est souvent assez difficile. Dans la plus grande partie des cas le diagnostique préopératif est appendicite aigué, volvolus, torsion d'une cyste ovarienne ou colelitiase aigue. L'eploration demontre absence de ces procès. Le facteur causal qu'on rencontre est un omentum épaissi, adhérent à l'abdomen dans quelque partie. Résection de la portion pathologique de l'omentum est le traitement curatif.

ZUSAMMENFASSUNG

Plastische Epiploitis

Die plastische Epiploitis ist ein klinisches Zustandsbild welches spontan, bedingt durch eine Entzündung eines Teils des Omentum oder als Folge einer Bauchoperation, auftritt. Die Symptome variieren von denen einer vagen Dyspepsie zu denen des akuten Darmverschlusses.

Die Differentialdiagnose ist oft sehr schwierig. In den meisten Fällen ist die pre-

operative Diagnose akute Appendicitis, Volvulus, Torsion einer Ovarialzyste oder akute Cholelithiasis. Die Probelaparatomie beweist die Abwesenheit dieser Zustände. Verdicktes, irgendwo im Abdomen angewachsenes Omentum ist der Grund dieser Erscheinung. Die Resetion des patholocisch verdickten Teiles des Omentum, führt zur Heilung.

SUMARIO

La epiploitis plástica

La epiploitis plástica es una entidad clínica que surge de una inflamación espontánea del epiploon o como secuela de una operación abdominal. Los síntomas que de ella resultan varían desde la dispepsia vagal a la obstrucción abdominal aguda.

El diagnóstico diferencial es frecuentemente muy difícil. En muchos casos el diagnóstico pre-operatorio es de apendicitis aguda, volvulus, torsión de un quiste ovárico o colelitiasis aguda. La exploración revela ausencia de estas condiciones. Se encuentra que el factor causante es el epiploon engrosado, adherido en alguna parte del abdomen. La resección de la porción patológica del epiploon restablece la salud.

RIASSUNTO

Epiploite plastica

L'epiploite plastica è un'entità clinica che origina da un'infiammazion-e di una parte dell'omento, spontaneamente o in seguito ad operazione addominale. I sintomi che ne risultano variano da una vaga dispepsia ad un'acuta ostruzione intestinale.

La diagnosi differenziale è spesso assai difficile. Nella maggior parte dei casi la diagnosi preoperativa è appendicite acuta, volvolo, torsione di una cisti ovarica o acuta colelitiasi. L'esplorazione dimostra assenza di questi processi. Il fattore causale che si riscontra è un omento ispessito, aderente all addome in qualche parte. Resezione della porzione patologica dell'omento è il trattamento curativo.

INTERNATIONAL ASSEMBLY IN MEXICO

BY INVITATION OF THE MEXICAN GOVERNMENT

Those contemplating traveling to Mexico for the next International Assembly, to be held in Mexico City, Mexico, from August 10 to 14, 1941, may obtain information about transportation facilities, special Assembly train arrangements and excursion tours by addressing Dr. Max Thorek, International Secretary of the International College of Surgeons, 850 West Irving Park Blvd., Chicago, Illinois

Abnormalities of the Cystic Artery as a Factor in Injury of the Extra-Hepatic Biliary Passages

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IN 1924, while working with the late Dr. John F. Connors of New York City on surgery of the upper abdomen, I became particularly interested in the abnormalities so frequently found in the blood supply of the gallbladder. We had occasion to observe and perform reoperations on many patients whose common or hepatic ducts had been considerably damaged during the course of a surgical procedure.

During the past fifteen years, after observing the blood supply in several hundred operations on the liver and gallbladder, I have convinced myself beyond any reasonable doubt that the main factor in injury to the hepatic ducts is a lack of clear knowledge of the anatomy of the blood supply of the gallbladder, or better, of the *abnormalities* of the anatomy of the blood supply of this area. In checking those cases in which we later performed some type of reconstruction operation, I found that in practically every case there had been a history of rather severe hemorrhage at the time of the original operation.

I shall attempt in what follows, in a brief but comprehensive manner, to review not only my own experiences but also abnormalities reported in the literature, and if possible, to explain why these abnormalities should and do result in duct injury.

It has been known for a long time, both from actual surgery and from autopsy findings, that many abnormalities do exist in this area. The blood supply is not anatomically consistent, and variations are such that, generally speaking, no two gallbladder operations can be done exactly alike, each constituting an individual problem. The mere fact that the gallbladder can be removed with relative ease and safety in a great number of cases by blindly clamping the duct has, in my opinion, resulted in duct injury, even where a normal cystic artery and duct are found. This type of surgery is commonly referred to as "blind surgery," and is, of course, avoided by the experienced surgeon. Even with a good exposure a most cautious and experienced surgeon will occasionally get into difficulties around the gallbladder which can quickly lead to serious trouble and prolonged surgical sequelae.

To safeguard against such occurrences, and to insure safe, conservative surgery of this region, an accurate knowledge of the blood supply, not only of the liver and gallbladder but of the entire upper abdomen, is absolutely essential.

ANATOMY OF THE GALLBLADDER

According to Cunningham's *Textbook of Anatomy*, the gallbladder is a pear-shaped viscus composed of (from above downward) the fundus, the body, the neck and the cystic duct. The gallbladder is usually attached to the under surface of the liver, and the tip of the fundus emerges above the lower border of this organ at a point where the lateral edge of the right rectus muscle attaches to the costal margin. Occasionally the entire gallbladder may be within the substance of the liver and may be reached only after dividing the overlying liver parenchyma. The gallbladder usually is, however, loosely attached to the underlying surface of the liver by overlying peritoneum and loose connective tissue, which thickens as the cystic duct and larger vessels are approached. The cystic duct is a direct continuation of the neck of the gallbladder and usually joins the hepatic duct after completing an inverted "C." This union occurs about two inches below the junction of the right and left hepatic ducts.

BLOOD SUPPLY

The blood supply of the gallbladder is derived from the cystic artery, which normally arises from the hepatic artery in its middle one-third. The hepatic artery comes off the coeliac axis and in turn has five major branches, namely: (1) gastroduodenal, (2) right gastric, (3) right hepatic, (4) left hepatic and (5) in most instances, the cystic. It is with the cystic artery that I shall deal henceforth.

The cystic artery usually arises from the hepatic artery, but it may arise from the right branch of this vessel. In approximately 70 per cent of all cases it crosses posteriorly to the bile passages. In 25 per cent it crosses anteriorly to the bile passages, and in approximately 5 per cent may arise from any part of the hepatic trunk and may approach the gallbladder in any one of several ways.

The late Dr. Reginald H. Jackson, in an article appearing in *Surgery, Gynecology and Obstetrics* (1938) has graphically depicted these abnormalities. With permission of his son, Dr. Reginald H. Jackson, Jr., I am herewith reproducing several drawings from his article which clearly illustrate some of my own points. My series contained all of the illustrated abnormalities with the exception of that in Figure 8, wherein the cystic artery arises from the right hepatic and divides into two branches. In addition, the gastroduodenal arises from the hepatic and crosses anteriorly to the common duct in its middle one-third. This rare abnormality which Dr. Jackson observed only more forcefully illustrates the necessity of careful surgery and a clear idea of the anatomy of the blood supply of this region.

ANESTHESIA

Though uncomplicated surgery of the gallbladder is in most cases easily performed, in others it offers difficulties of varying degree. I shall not deal with types of incision, position of the patient or assistants, though where properly used, they all play an important part in minimizing the possibility of danger and facilitating the difficult operative procedure. I shall make a few observations, however, relative to anesthesia, for without perfect anesthesia the hazards of this type of surgery are increased. The matter of anesthesia should be determined solely by the operating surgeon after carefully studying the candidate for surgery.

It has been my experience that the anatomy in this part of the body cannot be properly exposed without complete relaxation. In all gallbladder surgery a quiet, well-relaxed patient and clear exposure of the operative field are essential to good work. Here the suitable anesthesia for the individual case is of vital importance.

Ether anesthesia as a rule is not satisfactory, owing to the fact that even under the most favorable of circumstances, the respiration is labored and relaxation is not complete. From a strictly surgical standpoint spinal anesthesia, of course, is far superior to all others. The relaxation is perfect and breathing is not labored. However, all candidates for gallbladder surgery are not desirable risks for this type of anesthesia. For patients under forty-five years of age and with a minimum amount of liver disturbance, we feel that the next most satisfactory anesthesia is avertin, plus cyclopropane gas. For those over forty-five years cyclopropane alone is considered both safe and effective.

There are many factors which we [illegible]

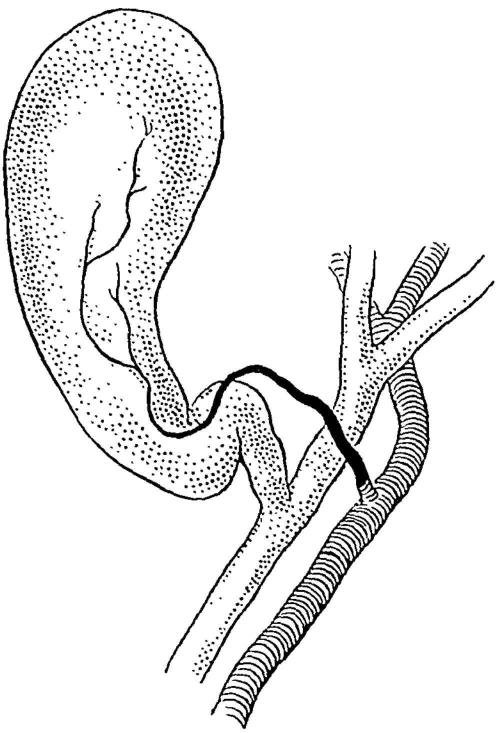

Fig. 1. The normal cystic artery as it occurs in approximately 25 per cent of all cases. Cystic artery arises from the hepatic near the middle one-third and arches across the hepatic duct, joining the cystic duct about three-quarters of an inch above its junction with the hepatic duct.

consider in deciding upon the type of anesthesia to be used. The most important, of course, is the determination of the disturbance in liver function.

SURGICAL CONSIDERATIONS

Once complete relaxation is attained, the stomach is easily and gently packed off mesially, while the transverse colon and small intestines are packed downwards. The field is then well exposed, and it is a very simple matter to divide the overlying peritoneum and expose the common duct. If the duct is to be opened, it is first further identified by puncture with a no. 16 gauge needle. Aspiration of bile in the syringe not only eliminates any further doubt in the mind of the surgeon as to the anatomy, but further facilitates the operation. By dividing the peritoneum over the common duct and by blunt dissection to the right, the cystic duct is, as a rule, easily identified. This duct normally courses off the anterior surface of the hepatic, but in some few cases may course posteriorly to the passage and after partially encircling the duct, unite with it on the left side. It is as a rule easily identified by its size, color and shape.

Once this identification is complete, an attempt is made to identify the cystic artery. The terminal branches of this artery are easily noted as they ascend the gallbladder, but the main body of the artery is not always so easy to identify. Usually (70 per cent) the cystic artery crosses beneath the hepatic duct immediately above the junction of the cystic and hepatic ducts (Fig. 2). It courses posteriorly behind the neck of the gallbladder and approaches the anterior surface of the body from the left.

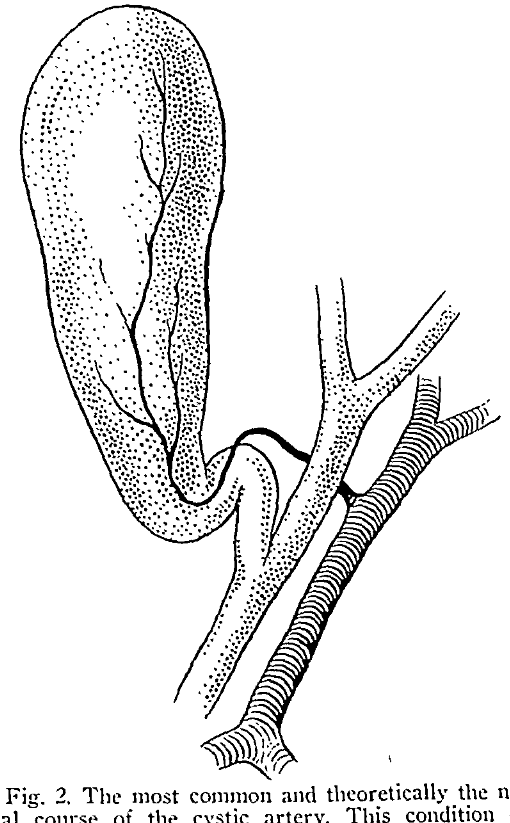

Fig. 2. The most common and theoretically the normal course of the cystic artery. This condition occurs in 70 per cent of all cases. The cystic artery comes off the hepatic in the upper one-third. It courses beneath the hepatic duct and reaches the cystic duct about three-quarters of an inch above the union of the cystic and hepatic ducts.

Once identified, this artery is ligated and divided where it approaches the cystic duct. The cystic duct is then ligated and divided; and after dividing the peritoneum on either side, the gallbladder is removed from below upwards.

MOST FREQUENT ABNORMALITIES

In many cases, however, the cystic artery does not follow this true anatomical course. This deviation from the normal is undoubtedly a major cause of serious injury to the duct proper or to some part of the extrahepatic biliary passages. I have found from experience that the cystic artery, in addition to its normal anatomical course, may take one of five abnormal courses in approaching the gallbladder, as will be seen in Figures 3-7.

Because of these abnormalities I have made it a hard and fast rule to seek carefully the cystic artery and to attempt in all possible cases to identify its origin. Authorities agree that in approximately 5 per cent of all cases some abnormality of this artery does exist. I have found that in somewhere near 20 per cent, or about 80 cases out of approximately 500, I was unable to identify definitely the origin of the artery. Of the remaining cases some abnormality existed in approximately 5 per cent.

In my opinion no abnormality exists if the cystic artery arises from the hepatic artery at any point at the level of, or above the point, where the cystic unites with the hepatic duct. Whether the artery approaches the gallbladder anteriorly or posteriorly to the hepatic duct is immaterial,

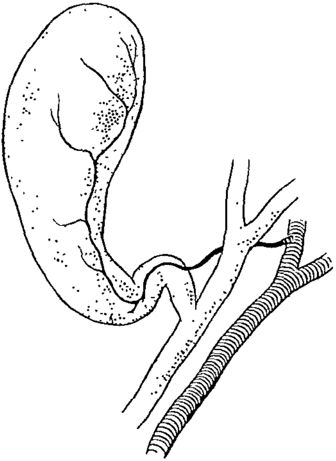

Fig 3. Probably the most common abnormality occurring in this area. The cystic artery arises from the right hepatic artery, courses beneath the hepatic duct and reaches the cystic at a point one-half to three-quarters of an inch above the junction with the hepatic duct.

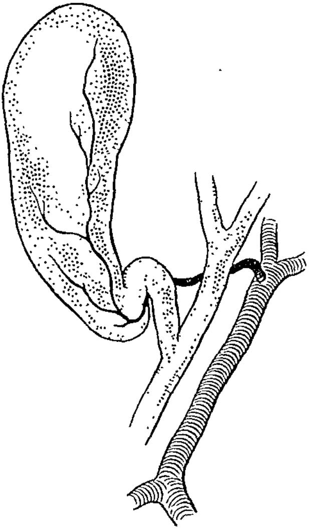

Fig. 4. Probably the second most common abnormality, in which we find the cystic artery arising from the hepatic at the junction of the right and left hepatic arteries, coursing beneath the hepatic duct and reaching the cystic immediately at its junction with the hepatic duct

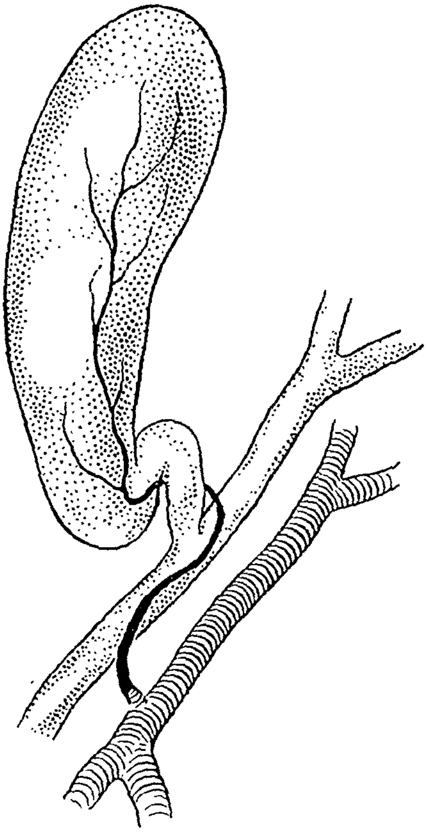

Fig. 5. An abnormality which is not common but one in which little difficulty is ever encountered in handling. The cystic artery arises from the hepatic near its beginning, courses along the anterior surface of the common duct to a point immediately behind junction of the cystic and the hepatic, where it turns abruptly to the right, reaching the cystic duct.

since we know that these two courses are considered as normal. If the artery comes off below this given point or from any branch of the hepatic, then an abnormality is said to exist. The most common abnormality which we have encountered is one in which the cystic artery arises from the right branch of the hepatic artery (Fig. 3). This abnormality is not difficult to deal with when suspected, but should hemorrhage occur in such a case, owing to the close proximity of the right branch of the hepatic duct and the short stump of the artery, one is very likely to include the duct in the clamp even when the exposure is unusually good.

A second, but somewhat similar, abnormality is one in which the cystic artery arises from the right hepatic vessel, but near the junction of the right and left vessels as they separate from the hepatic proper. This is clearly shown in Figure 4 and deserves the same attention as the above-mentioned abnormality, to which it is closely related. The dangers attendant upon hemorrhage from this vessel lie in the fact that it is very easy to include the duct proper in the clamp or ligation unless exposure is adequate.

These are the two most common abnormalities encountered in surgery of this area. Unless properly handled, they can and do

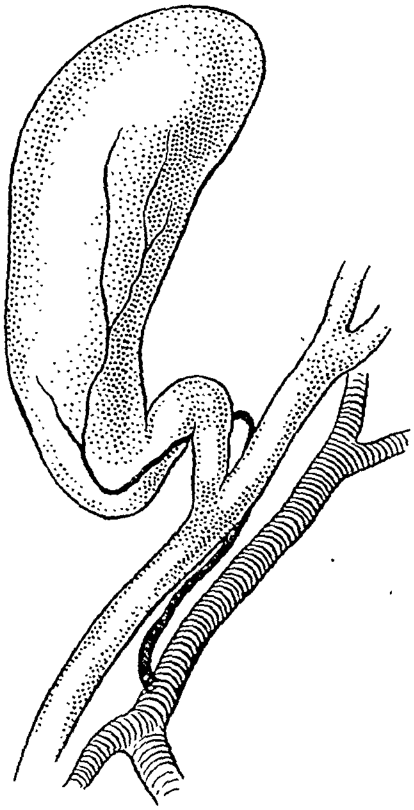

Fig. 6. An unusual abnormality which infrequently occurs. The cystic artery arises near the origin of the hepatic, courses beneath the common duct to a point approximately one-half inch above the junction of the hepatic with the cystic, then turns abruptly to the right, reaching the cystic duct one-half to three-quarters of an inch above its junction with the hepatic. Bleeding from this vessel frequently leads to serious consequence due to the fact that it is very difficult to pick up on account of the anatomy described above.

lead to serious results. In any case where the ducts have been damaged, the mortality rate increases in direct proportion to the extent of the damage, and naturally the morbidity increase results in prolonged hospitalization and suffering. In surgery of this area a few extra minutes spent in obtaining better exposure and safer ligation invariably result in better end results.

There is a certain margin of safety in gallbladder surgery below which we cannot expect to go. We must constantly take stock of our equipment, both mental and physical, in order to reassure ourselves that this margin is not too high. Only a few years back few hospitals in the country could boast of a gallbladder mortality rate of less than 10-15 per cent. Today there are few institutions with a mortality rate for all gallbladder surgery exceeding 3-4 per cent, and for the simpler cases, exceeding 0.5 per cent.

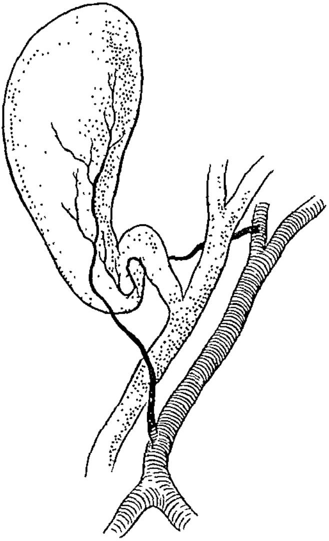

Fig. 7 Showing an accessory cystic artery arising from the first part of the hepatic, coursing anteriorly to the common duct and joining the gallbladder in its lower one-third. It also shows the cystic artery primarily arising from the right hepatic and joining the cystic duct one-half to three-quarters of an inch above its junction with the hepatic duct.

What has brought about this radical change? In my opinion it is the direct result of careful study on the part of the surgeon, not only of preoperative preparation but also of surgical technic. Through a well-exposed operative field the different structures are more easily identified and more properly and carefully handled, and hemorrhage is consequently less apt to occur. Abnormalities such as I have described above, and the three which I will mention later, are no longer surgical handicaps but are properly labeled as *abnormalities*, and in capable hands are treated merely as a part of a routine operative procedure.

OTHER ABNORMALITIES

In two of these abnormalities the cystic artery arises from the hepatic proper but at a point below the junction of the cystic and hepatic ducts. Abnormalities of this nature are not nearly so apt to result in duct injury in the event of hemorrhage as are those cases in which the artery is short and retracts rapidly. In case of hemorrhage, manual pressure of the hepatic artery with the thumb and index finger respectively, in and above the foramen of Winslow, controls the flow of blood until the bleeding point is picked up. Being long, the vessel makes the procedure more simple than in the case of the other abnormalities. The cystic artery in these cases, it will be noted from Figures 5 and 6, is long and therefore more easily handled in case of accident.

In Figures 5 and 6 it will also be noted that the cystic artery arises directly from the hepatic, but low down on the stalk. In Figure 4 the artery crosses posteriorly to the duct and follows the cystic duct pos-

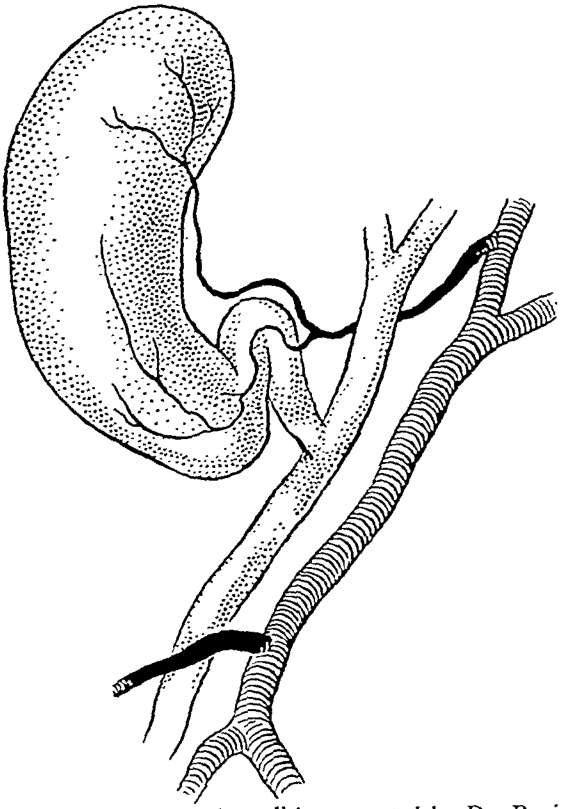

Fig. 8. An unusual condition reported by Dr. Reginald H. Jackson, in *Surgery, Gynecology and Obstetrics*, vol. 67, 1938. This shows the cystic artery originating from the right branch of the hepatic artery approaching the cystic duct beneath the hepatic duct and dividing into two branches. The lower branch supplies the cystic duct and the neck of the gallbladder and the upper branch supplies the body of the fundus. In addition, the gastroduodenal artery has its origin from the lower one-third of the hepatic proper, crossing anterior to the common duct. This anatomical abnormality of the gastroduodenal artery could result in pressure on the common duct or could result in severe hemorrhage at the time of an operation on the common duct.

teriorly to the gallbladder. Figure 5 shows the artery arising from low down on the hepatic artery, but crossing anteriorly to the common duct and following the anterior surface of this duct to the gallbladder. It is easy to see that little danger of injury to the common duct would be expected in case of hemorrhage from either of these abnormalities. The arteries are long and closely adherent to the common duct, do not retract readily and are easy to catch once loosened.

Figure 7 shows a somewhat different condition, which I have had occasion to observe in a single instance. In this case the cystic artery arises low down on the stalk of the hepatic artery, and an accessory cystic artery arises from the right hepatic. Even though one of these vessels should become loosened, the anatomy is such that with reasonable care the vessel may be caught without unnecessary damage to the common duct or, if above, to the hepatic duct or either of its divisions.

CONCLUSIONS

Undoubtedly there are many other abnormalities in this area never definitely identified as such. In routine postmortem examination no effort is made to determine the presence or absence of abnormality in this area unless the pathologist is especially requested to do so, and for this reason I feel that other interesting abnormalities have not been noted.

In this brief space I have attempted to show why an abnormality in one system, namely, the blood supply, might result in surgical injury to an adjacent system, the extra-hepatic biliary passages. The above sketches, while rough, will, I trust, clarify my attempt to visualize these abnormalities. We have many surgeons in this country today who number their operations on the extra-hepatic biliary passages in the thousands, and naturally I feel somewhat reticent to review the anatomical abnormalities in a series of only a few hundred cases. In addition to my own surgical experiences, however, I have consulted many articles, some having definite bearing on this paper, others only remotely connected. The authors whose papers have been reviewed in connection with this article are contained in the bibliography.

SUMMARY

To safeguard against injury to the hepatic ducts in gallbladder surgery, an accurate knowledge of the blood supply of the liver, gallbladder and entire upper abdomen is essential.

Abnormalities in the cystic artery are described and illustrated and surgical considerations, including anesthesia, are discussed.

BIBLIOGRAPHY

Bibbon, J H Review of the Operations Done on the Gallbladder and Ducts, Ann Surg 90.367-372 (Sept), 1929

Boyce, F. F, Veal, J R, and McFetridge, E M. An Analysis of the Mortality of Gallbladder Surgery, with a Special Note on the So-Called Liver Death, Surg, Gynec & Obst 62 43-53 (July), 1936

Brooks, C D · Modern Surgery of the Biliary Tract, J Michigan M Soc 37 25-29 (Jan), 1938

Carter, R F Benign Fibrous Stenosis of the Common Duct, Am. J Surg 30 110 114 (Oct.), 1935

Clute, H M. Operative Procedure in Common and Hepatic Duct Injuries, New England J. Med 206 47-51 (Jan), 1932.

Counseller, V S, and McIndoe, A J Dilatation of the Bile Ducts (Hydrohepatosis), Surg, Gynec & Obst. 43 729-740 (Dec) 1926

Doran, W T, Lewis K. M, Denneen, E B and Hanssen, E. C Gallbladder Surgery A Report of 200 Consecutive Operated Cases of Gallbladder Disease, Ann. Surg 98 321-332 (Sept), 1933

Eisendrath, D N.

Eliot, Ellsworth, Jr: Benign Cicatricial Strictures of the Bile Ducts, Ann Surg 104 668-707 (Oct) 1936

Graham, R R (a) Lowering the Mortality after Operations on the Biliary Tract, Illinois M J 60:196-202 (Sept) 1931, (b) Surgical Therapy in Gallbladder Disease, Canad M A J 30 119-123 (Feb), 1934, footnote 23

Gray, H K, McGowan, J M, Nettrour, W. S, and Bollman, J L Hepatic Damage in Biliary Disease, Its Relation to the Concentration of Bile Acids in the Bile, Arch. Surg (in press)

Herff, F P · Surgical Management of Destruction of the Common Bile Duct without Biliary Fistula, South. M J 28 216-218 (March) 1935.

Heyd, C G Complications of Gallbladder Surgery, Ann Surg 105 1-8 (Jan), 1937

Horgan, Edmund: Reconstruction of the Biliary Tract· A Review of All the Methods That Have Been Employed, New York, Macmillan, 1932

Jackson, Reginald H Surg, Gynec & Obst, vol. 67, 1938.

Judd, E S Stricture of the Common Bile Duct, Ann Surg 84 404-410 (Sept), 1926

Judd, E S (a) Sequelae and Accidents of Biliary Surgery, New England J Med 199 712-716 (Oct 11) 1928. (b) Problems Encountered in Operations on the Gallbladder and Bile Ducts, Journal-Lancet 47 97-99 (March 1),1927

Judd, E S, McIndoe, A H, and Marshall, J. M Surgery of the Biliary System in Lewis, Dean, Practice of Surgery, Hagerstown, Md, W F Prior Co, 1929, vol 7, chap 1 and 2.

Judd E. S, and Priestly, J T · Ultimate Results from Operation on the Biliary Tract, J A M A 99.887-891 (Sept) 1932

Kirschner, Operative Surgery, vol. 2.

Lahey, F H Strictures of the Common and Hepatic Ducts, Ann Surg 105.765-790 (May), 1937

Mayo, W J. Some Remarks on Cases Involving Operative Loss of Continuity of the Common Bile Duct, with Report of a Case of Anastomosis between the Hepatic and the Duodenum, Ann Surg 42 90-96 (July), 1905

Ransom, H K, and Malcolm, K D: Obstructive Jaundice Due to Diffuse Contracture of the Extra-Hepatic Bile Ducts, Arch Surg 28:713-726 (Apr), 1934

Sanders, R L: The End Results in 500 Cases of Cholecystectomy Tr A Resid. & Ex-Resid Physicians, Mayo Clin, 10 62-70, 1930, also Ann Surg 92 376-387 (Sept.), 1930.

Walters, Waltman· Strictures of the Common and Hepatic Bile Ducts, Surg, Gynec & Obst 48 305-313 (March), 1929

Walters, Waltman· Complete Stricture of the Common and Hepatic Ducts Treated by Transplantation of External Biliary Fistula into the Stomach or Duodenum Report of Five Cases, J A M A 96 1121-1124 (Apr 4), 1931

RÉSUMÉ

Anormalités de l'artère cystique dans les operations sur la vésicule biliaire

Pour sauveguard contre les dommages aux conduits hepatiques dans la chirurgie de la vésicule biliaire, est indispensable une conaissance exacte de l'irroration du sang, pas seulement du foie et de la vésicule biliaire, mais aussi de l'entière partie superieure de l'abdomen. Anormalités de l'artère cystique sont décrites en détail et considerations chirurgicales sont discutées, y comprise anesthésie.

ZUSAMMENFASSUNG

Abnormitäten der Arteria Cystica bei Gallenblasen Operationen

Um in Gallenblasenchirurgie Verletzungen der Gallenwege vorzubeugen, ist nicht nur eine genaue Kenntniss der Blutzufuhr der Leber und Gallenblase, sondern auch des ganzen oberen Abdomen, wesentlich.

Die Abnormitaten der Arteria cystica sind im einzelnen beschrieben und abgebildet und die chirurgischen Erwägungen einschliesslich der Anesthesie sind besprochen.

SUMARIO

Las anormalidades de la arteria cística en las operaciones de la vesícula biliar

Para proteger a los conductos hepáticos del daño causado en la cirujía de la vesícula, es esencial un conocimiento preciso de todo lo que pueda dar sangre, no únicamente en el hígado y vesícula, sino en todo el abdomen superior.

Se describen e ilustran con detalle las anormalidades de la arteria cística y se discuten las consideraciones quirúrgicas incluyendo la anestesia.

RIASSUNTO

Anormalità dell'arteria cistica nelle operazioni sulla cistifellea

Per stare in guardia contro danni ai dotti epatici nella chirurgia della cistifellea, ma anche dell'intera parte superiore dell'addome, è indispensabile una conoscenza accurata dell'irrorazione sanguigna, non solo del fegato e della cistifellea ma anche dell'intera parte superiore dell'addome. Vengono dettagliatamente descritte abnormalità dell'arteria cistica e vengono discusse considerazioni chirurgiche, inclusa l'anestesia.

Extradural Anesthesia

ALBERT GUTIERREZ, M.D., F.I.C.S.

BUENOS AIRES, ARGENTINA

IN this paper I wish to call brief attention to my experience with extradural anesthesia, which Dr. Pagés described in 1921, and used with great success, and which Professor Dogliotti of Italy did so much to further.

Since 1932 we have used this procedure in 5,200 anesthesias, with what we consider splendid results. This statement can be borne out by several distinguished North American physicians who called on our service while visiting Buenos Aires.

This method is based on the introduction of the anesthetic solution in the extradural space, outside the dura mater, where it comes into contact with the spinal roots and ganglia. The anesthetic agent acts on the spinal roots, also on the sympathetic system, passing through the conjunction foramina.

PUNCTURE

In making the puncture, great care must be taken *not to pierce the dura mater*. In case this happens, the needle must be extracted and a new puncture made in a different zone in the same region.

In 1933 we emphasized the importance of the liquid absorption produced at the level of the extradural space, describing a step which greatly simplifies the technic, thus making its execution possible in a larger number of cases. We employ a special needle with a cavity at the posterior end, where a drop of the anesthetic solution is deposited. The needle is then slowly pushed toward the extradural space. In the majority of cases, when the needle reaches the space, the drop is absorbed and drawn inward. In others an oscillating movement is observed, and sometimes, though very seldom, no modification at all is noticed.

Until the needle reaches the space, it is impossible to introduce the liquid contained in the syringe, and a strong resistance is noted. Once the needle reaches the space, the fluid is easily expelled from the syringe (syringe test). The sign referred to is observed in 90 per cent of the cases when carefully sought.

We now make the punctures only in the lumbar region, preferably with the patient in a sitting position, as for intradural or spinal anesthesia.

ANESTHETIC SOLUTION

We use the following anesthetic solution:

Novocaine.........	0.50 gr.
Pantocaine.........	0.05 gr.
Physiological serum	50 cc.

The anesthetic powder must be sterilized by tyndallization, and mixed with the sterilized physiological serum at the precise moment the puncture is accomplished. It is then very slowly introduced into the extradural space, according to the aforementioned indication.

The quantity used depends on the physical state of the patient, on his height and on the nature of the disorder with which he is affected. For upper abdominal operations we generally employ from 40 to 50 cc. of the solution. For lower abdominal operations, from 30 to 40 cc. For major gynecological surgery, from 40 to 45 cc. For lower limb interventions, usually from 30 to 35 cc.

Owing to the wide diffusion of the anesthesia, at times reaching the chin, thoracic surgery can be performed with the same dose as employed for upper abdominal surgery. The puncture must be made in the lumbar region.

The anesthesia lasts, according to the quantity injected, from two to two and one-half hours.

AREA AFFECTED

The area affected extends from the soles of the feet upwards, according to the quantity injected, and allowing for individual factors. In abdominal surgery we generally obtain anesthesia which reaches the clavicles, first or second intercostal spaces, with 40 cc. With a larger dose the anesthesia may reach to the chin. More localized zones of anesthesia can be obtained by laying the patient on his side while making the puncture. A smaller dose can then be employed. The area of the spinal nerves should be kept in mind in order to obtain the proper zone of anesthesia.

Counterindications for the employment of this type of anesthesia are the same as for spinal anesthesia.

We have amply treated this topic in our own country, and this is only a limited résumé of the procedure; our colleagues Soresi, Valerio, Senger and Botone, Malan, Hess, Harger, Odom, and Heissig, have treated it in the United States.

SUMMARY

The author has used extradural anesthesia since 1932 in 5,200 cases with excellent results. It is indicated in operations on the extremities, in the lower abdomen, in the upper abdominal or thoracic regions and in major gynecology. A special needle is used. If the spinal canal is entered, a new puncture must be made.

RÉSUMÉ

Anesthésie extradurale

L'auteur a employé anesthésie extradurale depuis l'année 1932 dans 5,200 cas avec des resultats excellents. Elle est indiquées dans les operations sur les extremités, sur le bas abdomen, dans les regions superieures de l'abdomen et du thorax et dans la chirurgie mineure. Une aiguille speciale est employée. Si on entre dans le canal spinale, on doit faire une nouvelle piqûre.

ZUSAMMENFASSUNG

Extradurale Anesthesie

Der Author verwendete extradurale Anesthesie seit dem Jahre 1932 in 5,200 Fallen mit ausgezeichneten Resultaten. Sie ist bei Operationen der Extremitäten, im Unterbauch, im Oberbauch oder Thoraxgegenden und in grosser Gynekologie, angezeigt. Eine eigene Nadel wird verwendet. Wenn der Spinalkanal angestochen wird muss ein neuer Einstich gemacht werden.

SUMARIO

La anestesia extra-dural

El autor ha usado la anestesia extra-dural desde 1932 en 5,200 casos resultados excelentes. Es indicada en las operaciones de las extremidades, en el abdomen bajo y alto, en las regiones torácicas y en las grandes intervenciones ginecológicas. Se usa una aguja especial. Si se entra en el canal espinal, se debe hacer una nueva punción.

RIASSUNTO

Anestesia extradurale

L'A.ha usato anestesia extradurale fin dal 1932 in 5,200 casi con risultati eccellenti. È indicata in operazioni sulle estremità, sul basso addome, nelle regioni superiori dell'addome o del torace e nella ginecologia minore. Viene usato un ago speciale. Se si entra nel canale spinale, bisogna fare una nuova puntura.

Gangrene of the Uterus Complicating Cesarean Section; Ruptured Uterus*

CASE REPORTS AND REVIEW OF THE LITERATURE

LAWRENCE MATTHEW MARLEY, M.D., M.I.C.S.

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TWO major complications of pregnancy and labor, rupture of the uterus and gangrene of the uterus, both occurring with atypical symptomatology, are presented in this report.

The patient, a well-nourished, robust woman 32 years of age, was referred to me at term by a physician who reported a normal course during the entire pregnancy. Her history revealed that she had undergone an operation some four years previously for ruptured, ectopic pregnancy on the right side. The appendix was also removed at that time.

With the onset of labor pains and with membranes intact, she was admitted to the Obstetrical Department of the Hospital of St. Anthony de Padua, Chicago.

Early in labor a large amount of greenish vaginal discharge was noted. Repeated rectal and one vaginal examination revealed after several hours of labor that no progress was being made. An X-ray examination of the lower abdomen and pelvis demonstrated the presence of a large, full-term, intra-uterine fetus presenting no obvious deformities or congenital anomalies. Cephalic presentation in LOA position, with no appreciable degree of molding of the fetal head, was noted. No gross disproportion between the fetal skull and pelvic inlet was indicated. After forty hours of labor with no progress obstetric consultation was held. Rectal examination revealed about two fingers' dilatation of the cervix uteri. The fetal heart tones, which had been 140 per minute, of good value and strong, had increased to 160 per minute and were not as strong as at first. Because of the uterine inertia and the signs of fetal distress, it was deemed best to perform an abdominal section.

OPERATION

A low paramedian incision 15 cm. long was made together with a low, classical incision of 9 cm. in the anterior uterine wall. The unruptured amniotic sac seemed friable in character, greenish in color, and adherent to the endometrium. A moderate amount of amniotic fluid was noted.

The head was delivered from the pelvis by placing two fingers of the left hand beneath the head and exerting slight pressure. The operative incision was sutured in the usual manner with three rows of fine chromic catgut. Upon the completion of wound suture, a tear was discovered in the lower anterior uterine segment in the median line which was not connected in any way with the operative wound. This rent extended downward through all the layers of the uterus to about 5 cm. of the external os. A transverse laceration of 6 cm. was also noted at the internal os. The rent in the superior inferior diameter was drawn together by four interrupted fine catgut sutures. The bladder was uninjured. Two small strips of plain gauze were placed anterior to the wound to control capillary oozing. One medium cigarette drain was placed in the upper part of the tear to facilitate drainage. A retention catheter was placed into the bladder to control distention and this was kept in situ for 36 hours.

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*Thesis for membership.

In the course of the operation, adhesions were noted on the posterior uterine wall, involving the ileum. The transverse colon was dilated; there were many adhesions about the previous laparatomy scar, and the tubes and ovaries appeared normal.

How and when the laceration occurred in the lower uterine segment cannot be stated definitely. It was either entirely spontaneous, occurring most likely during the excitement stage of anesthesia, or was perhaps associated with delivery of the head. Bleeding from the rent was not profuse. After delivery of the child 1 cc. of pituitrin was injected into the posterior uterine wall.

The mother left the operating room in fair condition. The male infant was normal and in good condition, with a weight of eight pounds and fifteen ounces.

POSTOPERATIVE COURSE

For a period of forty-eight hours no untoward manifestations were observed. Then, however, pulse rate, temperature and respiration began to rise. The abdomen was soft but somewhat distended; the bowels moved freely with enemata, and urine passed spontaneously during the postoperative period. No paralytic ileus existed at any time.

The patient's condition continued to grow worse, with only temporary remissions or slight improvement despite vigilant postoperative treatment. This treatment consisted of hot turpentine stupes to the ab-

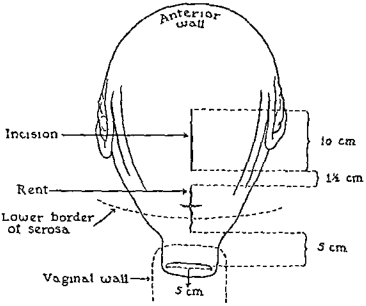

Fig. 1. Diagram of operative findings.

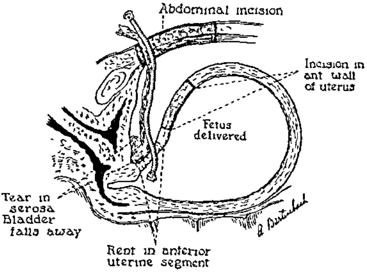

Fig. 2. Diagram indicating operative procedure.

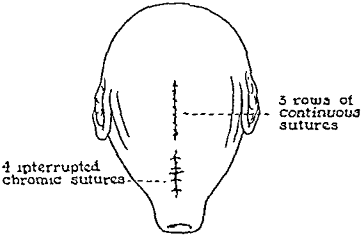

Fig. 3. Completed operation showing incision in uterus and laceration united with sutures.

domen, an Abbott tube into the jejunum, the use of a rectal tube to lessen distention, intravenous administration of normal saline solution and 5 per cent dextrose, three transfusions of citrated blood (no reactions), and the administration of sulfanilamide, neoprontosil, nasal oxygen and sedatives for pain and restlessness.

At first there was a moderate amount of drainage from the wound and little vaginal bleeding. The patient became nauseated and vomited a greenish colored fluid. She was restless, complained of pain and became cyanotic, uncooperative and irrational.

On the fourth postoperative day much dark discharge from the vagina was noted. Air was noted escaping from the vagina and the discharge was frothy in character. Cultures from the wound raised suspicion of gas bacillus infection and cultures were sent to the state laboratory. Death occurred on the fifth postoperative day. Rectal temperature at the time of death was 106.5 F.

The overwhelming nature of the infection is revealed by the differential white cell count:

	Postoperative Day			
	2nd	*3rd*	*4th*	*5th*
Segmented neutrophil leukocytes..........	50%	87%	60%	29%
Nonsegmented neutrophil leukocytes......	8%	2%	26%	45%
Lymphocytes.........	9%	9%	10%	11%
Monocytes............	3%	....	4%	4%

Necropsy findings were the following: "Gangrene of the anterior wall and cavity of the lower uterine segment with a large perforation of the anterior wall (probably Bacillus subtilis associated with gangrene). Gangrenous endometritis of the upper uterine segment and the cervical canal. Early generalized peritonitis, most marked in the lower abdomen."

Peritonitis evidently developed late, when the patient was in the terminal stage.

The tentative clinical diagnosis of gas gangrene was not confirmed by the state laboratory.

The bacterioscopic findings were: "Peritoneal fluid—many pus cells. Many gram-positive cocci, single, in pairs, and short chains and a few gram-positive short rods." There were similar findings pertaining to fibrinous pus in the pelvic peritoneum.

Culture of the peritoneal fluid revealed: "Agar—large, gram-positive rods, with only a slight suggestion of spore formation. These are similar to those seen in cultures during life. Broth—small gram-positive rods and cocci, some in short chains."

Cultures during life (these consisted of vaginal secretion and discharge from the incision): "Anaerobic and aerobic cultures and rabbit inoculation reveal only an aerobic, spore-bearing, gram-positive bacillus, which is probably Bacillus subtilis."

GANGRENE OF THE UTERUS AND THE GAS BACILLUS

There were a number of observations during the short postoperative course which were not inconsistent with the clinical diagnosis of gas gangrene infection of the uterus. In a review of the literature on gas gangrene in general, and gangrene of the uterus in particular, the admonition is made repeatedly not to give too much weight to a single negative culture. The laboratory difficulties in making a positive diagnosis are emphasized.

Callender and his co-workers, in reviewing cases of gas gangrene in civil practice, (San Francisco Department of Health, 1920-1938, 109 cases), give the symptoms as pain, fever, accelerated pulse rate and local changes. Pain is often the first symptom and may be out of all proportion to the injury. On the other hand, fulminating gas gangrene supervened in a supposedly clean wound and the patient complained "almost not at all." Swollen and reddened wound edges, serous and serosanguineous exudate and gas bubbles revealed by X-ray constitute the most reliable clinical findings which should lead to examination of smears and cultures of exudate from the depth of the wound.

In a discussion of the micro-organisms associated with the gas bacillus, Callender emphasizes the difficulty of securing positive cultures. Cooperation between bacteriologist and surgeon is essential to successful diagnosis. If material is insufficient, a negative smear is not a convincing proof of the absence of this organism. The wide distribution of the gas bacillus and its presence in healthy, uncontaminated tissues is a comparatively late discovery. Callender points out the possibility of activating latent spores lying dormant in tissues. Tissues damaged by operation are prepared for the rapid development of these spores.

Mitchell and others review 208 cases reported by hospitals of New York State (exclusive of New York City). In 87 cases the diagnosis of gas gangrene was positive and in 48 cases the records were incomplete but sufficient to establish the diagnosis. In the remainder the diagnosis was questionable or the record too incomplete for use. Of the 135 accepted cases, 66 were fatal; 7 were cases of pregnancy, all of which were fatal; only 1 of the 7 was confirmed by culture; all the others were diagnosed at autopsy. Three followed criminal abortions, one self-induced abortion, and one followed miscarriage with the removal of retained placenta by sponge forceps. In one case, an 8-months' pregnancy, there were no fetal heart sounds. Fever was present but the patient was not examined. No operation was performed and the diagnosis was made only at necropsy. Another patient in whom eclampsia and secondary anemia were present, and who produced a living child by induced labor, revealed gas gangrene at necropsy.

Carrell, reporting a case of therapeutic abortion undertaken in a patient with active pulmonary tuberculosis, noted that before intervention there was a small amount of discharge of brownish blood having a foul odor. Smears showed enormous numbers of a "gram-positive, encapsulated, rod-like bacilli, typical of Welch bacillus." The fetus was badly macerated. There had been previous attempts at self-induced abortion. Gas gangrene antitoxin was administered. The fetus was expelled, but a retained placenta necessitated manual removal. After a blood transfusion and repeated doses of antitoxin the removal was executed without instruments to avoid injury to the infected tissues. The patient recovered, which confirmed the belief that a gas gangrene infection within the uterine cavity is less likely to spread than in almost any other space in the body.

Perhaps the most interesting study presented in the literature, from the standpoint of throwing light on the personal case here reported, is that recorded by Eliason and his colleagues. They say, in part, concerning the uterus as an atrium: "Patients affected following abortion or instrumental delivery show marked constitutional reaction. The patient is prostrated, with a rapid, thready pulse, and an extreme fall in systolic pressure. Restlessness and extreme pallor are noted. Toombs and Michelson reported jaundice in 50 per cent of the cases due to intense hemolysis, which more usually causes dusky purple suffusion of the skin. They found the red blood cells below 2,000,000 in 58 per cent of the cases and hemoglobin below 60 per cent in 78.5 per cent of the cases. A loss of 2,000,000 red blood cells in twenty-four hours is reported. A positive blood culture was present in sixteen cases during life. In other types of infection due to Clostridium Welchii, positive blood cultures are rare. The Welch bacillus is probably present in a larger percentage of cases of puerperal sepsis than is generally recognized." (Wrigley, Falls.)

Nason and Starr believe that the Welch bacillus is a more frequent complication of surgical procedures than is commonly believed, and Williams notes a similarity between the clinical pictures of gas gangrene, late peritonitis and intestinal obstruction. He reports a lowered mortality rate in patients with acute appendicitis when antitoxin is used, also a decrease in restlessness and distention. (Bower and Clark report similar experiences; other workers discredit the theory.)

RUPTURED UTERUS

Hoffman reports six cases of ruptured uteri, two of which occurred in the Obstetrical Service, Charleston General Hospital, after March, 1934 (reported in February, 1939). He says that the ruptures occur most frequently in multipara. Three cases of patients 18, 26 and 39 years old, respectively, were associated with previous cesarean section. It is perhaps significant that in the other three the ages were 29, 42 and 42. Rupture followed administration of pituitrin in all three. In each case there had been repeated pregnancies, terminating sometimes in abortion. In one case the first pregnancy was ectopic, and a tube was removed. The second pregnancy was terminated by cesarean section following eighteen hours of hard labor without progress. A nine-pound, living baby was delivered. It was noted that the body and fundus of the uterus were very thin. (Compare case here reported.) The third pregnancy ended in abortion. The fourth was to have been terminated a month before expected date by cesarean section, but rupture occurred some two weeks before the operative day decided upon. There was no shock, although the patient traveled thirteen miles to the hospital. Hoffman says: "Rupture may and frequently does occur without characteristic signs and symptoms."

Muschik reports a case of spontaneous rupture without alarming symptoms. This occurred in a 22-year-old woman who had had an abortion at four months accompanied by fever. With the second labor pain and abdominal pressure the birth occurred spontaneously, but the loosened placenta slipped through the rupture into the abdominal cavity. No signs of pain or anemia indicated the occurrence of the rupture, which was discovered only upon manual attempts to remove the placenta.

Antoine, reporting another case without symptoms or blood loss, emphasizes the importance of the condition of the uterine wall because of previous pregnancies and the presence of a large fetus. He also records observing the lower segment of the uterus drawn paper-thin at cesarean section in another patient.

A series of microscopic studies showing the nature of the pathological alterations of the uterine wall associated with rupture of the uterus are presented by Wlassow. He also says that despite the pronounced characteristics of the classical picture of impending rupture of the uterus, it is not uncommon to find cases in the literature in which there were no distinct premonitory signs. Sometimes the symptoms are so entirely lacking that the exact time of the rupture cannot be fixed either by the woman in labor or by the observing physician. There are cases reported in which no diagnosis was made and the condition was discovered only at autopsy. (Alexandrow, Jakowlew, Dneprow and others.)

In the course of the last ten years in 34.656 births there were six cases of complete and two of partial rupture. In one case cesarean section was performed following the clinical picture of Bandl's rupture; in the other cases the premonitory signs were not recognized. The first case concerned a 27-year-old woman who had had an earlier abdominal pregnancy. Laparotomy revealed rupture at the site of the earlier trauma. A brief review of the other cases follows:

CASE REPORTS

Case 2.—The patient, 39 years old, had had ten pregnancies with eight spontaneous births; the ninth was a forceps extraction of a dead fetus. There was a tear in the lower segment of the uterus across the anterior wall Microscopic examination revealed hypertrophied muscle fibers interwoven with connective tissue and an acute fibrous process with infiltration of decidual tissue. This case of early and unexpected rupture was not associated with any mechanical hindrance Birth mechanism and pelvis were normal There was an inflammatory process in the wall of the uterus with proportionally weaker labor pains and diminished activity.

Case 3—In this patient there was no sign of impending rupture. She had had four normal births and one induced abortion. Inflammatory signs were present in the uterine wall on microscopic examination; and there was marked disproportion between the fetus and pelvis.

Case 4.—The first pregnancy of this patient had occurred at the age of 35. She had given birth twice and had aborted three times (one induced). Scar-like tissue, probably the result of previous abortions, was present in the parts surrounding the tear. Disproportion existed between the pelvis and fetus. No doubt a previous operation for shortening of the round ligament was also an unfavorable factor Rupture was discovered at necropsy.

Case 5.—The patient, age 32 years, had had six pregnancies with two births. There were energetic labor pains and progress of labor. Some disproportion existed between the pelvis and fetus The patient was prepared for cesarean section; her pulse was small *(120) and there was pronounced skin pallor* The pelvis was found full of blood; the fetus was in loops of the intestine in the unbroken bag of waters. The tear was in the lower segment. Microscopic signs indicated a chronic inflammatory process with development of scar connective tissue

Case 6.—The patient, 38 years of age, had had ten previous births which came to term without complications. *She was on the table for forceps delivery* when signs of rupture appeared. A quick, easy forceps delivery followed and laparotomy was performed, but the patient died Microscopic examination revealed the presence of an inflammatory process and scar tissue, the result of previous births

Case 7.—This patient, 31 years of age, gave a history of two previous pregnancies, one birth and one induced abortion From onset there was little activity, indicating an inferior quality of the uterine wall.

Case 8.—The patient, 30 years old, was pregnant for the fifth time with an impending rupture. At cesarean section a hematoma was found in the right lower segment underneath which there was a muscle tear which did not extend into the uterine cavity. A living fetus was extracted and the tear sutured There was a smooth postoperative course. The disproportion between fetus and pelvis was responsible for the stormy course of labor. There was no microscopic section in this case but the etiology of the rupture is clear

SUMMARY

A case of gangrene of the uterus with rupture of the lower uterine segment is reported. The possible and probable etiological factors are reviewed, and the antecedent factors, as gleaned from the patient's history, are evaluated. It is concluded that in all probability the gangrene in this case was occasioned by Welch bacillus infection.

The literature of gas gangrene and ruptured uteri is reviewed and several short case reports are given.

BIBLIOGRAPHY

1. Antoine, T · Ueber spontane atypische Uterusruptur, Wien klin. Wchnschr., vol. 6, 1931.

2 Callender, C. Latimer, Haim, Arthur, and Maximov, Alexis· Gas Gangrene; An Analysis of 109 Cases Encountered in Civil Practice, Am. J Surg. 42·811-823 (Dec), 1938

3. Carrell, W. D. Intra-uterine Gas Gangrene with Recovery, Am J Obst & Gynec 30 858-860 (Dec), 1935.

4. Eliason, E. L , Erb, W. H , and Gilbert, P. D : The Clostridium Welchii and Associated Organisms, Surg., Gynec. & Obst 64·1005-1014 (June), 1937

5 Hoffman, W E.: Ruptured Uterus, West Virginia M. J. 35 74-76 (Feb.), 1939

6. Manheim, P J , and Maier, H. C Clinical Gas Gangrene with Absence of the Welch bacillus, Ann Surg 101.817-818 (Feb.), 1935

7 Mitchell, C W H , Bryant, T. L., and Chapman, O D.: Gas Gangrene Morbidity and Mortality in New York State (Exclusive of New York City) Based on General Hospital Reports for the Years 1932-1936 Inclusive, New York State J Med. 38 1022-1025 (July 15), 1938.

8. Muschik· Spontanruptur des Uterus ohne alarmierende Symptome, Med Welt vol 16, 1932

9. Wlassow, W.· Die Spontanruptur des Uterus. Zentralbl. f. Gynaek. 58 1165 1174 (May 19), 1934

RÉSUMÉ

Gangrène de l'uterus compliquante section césarienne

Un cas de gangrène de l'uterus avec rupture du segment inferieur est reporté et les facteurs étiologiques possibles et probables viennent résumés. Les facteurs antécédents déduits de l'histoire du malade sont évalués. Il semble qu'avec toute probabilité la cause de la gangrène dans ce cas ait été une infection par le bacille de Welch.

ZUSAMMENFASSUNG

Gangran des Uterus als Komplikation einer Sectio Caesaria

Ein Fall von Gangran des Uterus mit Ruptur des unteren Segmentes wird beschrieben, die moglichen und wahrscheinlichen etiologischen Faktoren werden besprochen.

Die aus der Krankengeschuchte bekannten, vorhergehenden Umstände werden bewertet. Es scheint, dass aller Wahrscheinlichkeit nach, in diesem Falle das Gangran durch Infektion mit Welch Bazillus hervorgerufen wurde.

SUMARIO

Gangrena del útero que hizo compleja una sección cesareana

Se describe un caso de gangrena del útero con puntura del segmento bajo y se da cuenta de los factores etiológicos posibles y probables.

Informes que se encuentran en la historia del paciente se estudian. Parece que la gangrena en este caso fué ocasionada por una invasión de bacillus de Welch.

RIASSUNTO

Gangrena dell'utero complicante sezionea cesarea

È riportato un caso di gangrena dell'utero con rottura del segmento inferiore e sono riassunti i fattori etiologici possibili e probabili. Sono valutati i fattori antecedenti tratti dalla storia del paziente. Sembra che con tutta probabilitã la causa della gangrena in questo caso fosse un'infezione da bacillo di Welch.

SURGEONS OF CENTRAL AND SOUTH AMERICA

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Nephro-Omentopexy for the Relief of Hypertension*

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EXPERIMENTS ON ANIMALS

EVER since the experimental investigations of Goldblatt established a relationship between hypertension and the ischemic kidney, attempts have been made to re-establish kidney circulation and note its effect on hypertension. Goldblatt's results, obtained by rendering animals hypertensive experimentally through renal arterial constriction, thus producing a renal ischemia, have been substantiated by other workers.

The problem of restoring the kidney circulation then presented itself. Mansfield, Weeks, Steiner and Victor studied this problem by first producing experimental hypertension in dogs through renal arterial constriction, and then re-establishing kidney circulation through the pexis of either spleen or omentum to the kidney. Their results were impressive. In three of their dogs, after decapsulation and pexis with the omentum, they found a temporary reversal of hypertension. In four other dogs the cut surface of the spleen was attached to the renal surface or imbedded in an incision through the long axis of the kidney down to the pelvis. In these a permanent return of blood pressure to normal was established. The blood pressure in their animals before renal arterial constriction was 150. The blood pressures were elevated following arterial constriction to 220-250 mm. of Hg.; after the pexy, they fell to 130-180. The authors concluded that with omentopexy the lowering of the blood pressure was temporary, while with splenopexy the low blood pressure was sustained.

Davis and Tullis, experimenting further, used seven dogs in which the omentum was lifted from the peritoneal cavity and packed into an incision in the renal parenchyma. From this experiment they drew the following conclusions: (1) that the omentum quickly becomes adherent to the renal parenchyma, with large arterial and venous blood channels running from the omentum into the renal parenchyma and branching into fine capillaries; (2) that vascularization of the operated kidney was considerably greater than of the nonoperated kidney, with intertubular and glomerular capillaries distended in the artificially vascularized kidney. They also showed that after some time the operated kidney diminished somewhat in size, with relative increase in the number of glomeruli and marked dilatation of the renal tubules; that in the operated kidney the specific gravity of the urine was lower, and the water diarrhesis greater, increasing from 5 to 100 per cent; that the operated kidney cleared 28.3 cc. of urea content per minute, compared to 13.6 cc. for the nonoperated kidney; finally, that the two-hour PSP test was 45 per cent compared to 27.5 per cent on the nonoperated side.

MacNider and Donally corroborated the above findings in establishing adventitious circulation in the normal kidney. Using fourteen dogs, they introduced the omentum into the kidney, incised through the cortex and into the medulla but not into the pelvis. This was sutured in place with fine sutures. They found capillaries with omental connections entering the cortex and medulla.

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*From the Urological Department of the Midtown Hospital; anatomical dissection at the New York Polyclinic Hospital. Read before the Genito-Urinary Section of the New York Academy of Medicine, February 21, 1940.

**The author is grateful to Dr. Leo A. Shifrin for his aid in abstracting the literature.

Since August, 1937, Bruger and Carter have treated eight patients with hypertension by improving the right kidney circulation with an accessory circulation. While the results of their work have not been fully reported, they used the abdominal approach to the kidney, decapsulated and enveloped it in a new capsule of omentum. One of their cases came to necropsy several months after operation, death being due to causes other than the operation. They were able to show omental capillaries spreading through the kidney beyond the attachments of the nephro-omentopexy. They found the effects on lowering blood pressure encouraging and stated that they hoped to do bilateral nephro-omentopexies later.

TYPICAL CASE

I. M., a female, age 32, a nurse, complained of persistent backache in the region of both kidney areas. Her family history was irrelevant except for the fact that the death of one brother a year before, at the age of 41, was said to be due to constant high blood pressure.

In regard to her past history, she had had pleural effusion eight years before, which necessitated rest in bed for six months. An appendectomy was performed in 1936 because of pain in the right lower quadrant and backaches. There was a high leukocyte count at the time of operation. The appendix was normal. She had had attacks of pyelitis for the past ten years. Her general history stated that she was constipated, complained of headaches, was a poor sleeper, had had shortness of breath with occasional swelling of ankles and hands.

Her hypertensive history dated back seven years, when she was told that she had high blood pressure. The blood pressure ranged from 260 down to 160, never lower. In 1938 the patient experienced a feeling of collapse and pain in the left arm. This was diagnosed as a mild cerebral accident. It recurred on January 24, 1939, with sudden onset of collapse and slight paralysis of the left arm, weakness of the left leg and terrific headaches. The medical diagnosis was hypertension with mild cerebral hemorrhage. Under medical care and rest, the patient felt somewhat better. However, the hypertension remained. Shortness of breath, general fatigue, headaches and backaches were associated symptoms.

In February, 1939, she was admitted to the Midtown Hospital, and assigned to the urological service for observation because of the persistent backache over both kidney regions. Blood pressure at the time of admission was 160/94.

Urological study.—Neither kidney was palpable. There were no areas of tenderness over either kidney or ureter. Flat X-ray was negative for calculus disease. Intravenous urogram showed a slight degree of pyelectasis on both sides. The indigo carmine renal function test was normal. Examination of specimens of urine from the separate kidneys was negative. The blood picture at this time was normal. The blood chemistry showed a normal urea, CO_2 and sugar.

Because of these negative findings, and the fact that there was no demonstrable pathology present to explain the hypertension, plus the fact that medical therapy over a period of seven years had been unsuccessful, as established by the fact that the patient was unable to pursue her usual occupation, we suggested a nephro-omentopexy. We explained to her that this was only an attempt to help her and relieve her hypertension. She consented to this immediately. Though we had promised little, she preferred the relief surgery might offer.

OPERATION

The operative technic used, as far as we could determine, has not been employed on a human by previous workers in this field.

The usual left oblique kidney incision was made, exposing the perirenal fascia. This was separated from the posterior parietes, mobilizing the kidney with its peri and para renal envelopes. The peritoneum was then separated from the anterior aspect of the kidney. The perirenal fat was freed from the kidney, exposing a clear, smooth capsule. The peritoneum was now opened external to the descending colon, opposite the renal pedicle (Fig. 1). The omentum was next delivered through this opening. The medial edge of the peritoneal opening was sutured to the omentum by interrupted catgut sutures. Now the lateral peritoneal edge was sutured to the ventral aspect of the omentum by interrupted sutures. This closed the opening in the peritoneum, leaving this portion of omentum extraperitoneal (Fig. 2).

Three longitudinal incisions were then made in the renal capsule—one on the convex surface, another on the anterior surface near the hilus and the third parallel to the second on the posterior surface of the kidney. The capsule was raised between these incisions and the omentum fed through the anterior incision, through the incision on the convex surface and then through the posterior incision of the incised capsule. The omentum thus lay subcapsular, and was kept in position by interrupted catgut sutures between the renal capsule and omentum (Fig. 3). The kidney was now replaced and the wound closed in the usual manner. The patient was returned to bed.

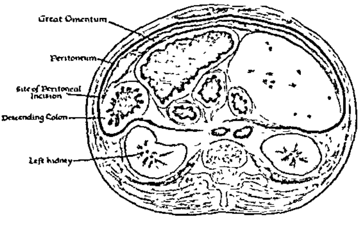

Fig 1. Peritoneum opened external to the descending colon, opposite renal pedicle

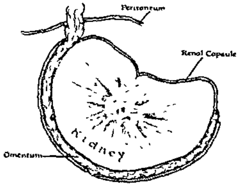

Fig. 2 Lateral edge of peritoneum sutured, leaving portion of omentum extraperitoneal.

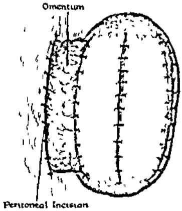

Fig. 3. Omentum sutured to renal capsule by interrupted catgut.

Some of the perirenal tissue removed at the time of operation was sent to the pathological laboratory. To our great surprise, it was reported that the small arteries of the fat areolar tissue showed intensive sclerosis with marked narrowing of the lumen and early fibrotic changes of the intima, very definite medial hyperplasia and fibrosis of the adventitia.

The patient made an uneventful postoperative recovery and left the hospital in good condition. Now, one year after operation, her blood pressure remains 132/80. She feels better than she has ever felt, has no complaints of any kind, and does normal twelve-hour nursing duty. The hypertension is under control at present. The patient has granted us permission to study her kidneys should any unforeseen accident cause her demise.

We have presented this case because of the impressive result obtained with a type of surgery that is still experimental and highly speculative. Just what the future of this type of surgery will mean in the treatment of hypertension is very difficult to estimate. We are of the opinion that if we can even occasionally offer relief to hopeless cases by surgical methods, surgery should by all means be employed early.

SUMMARY

Experimental investigations in the field of hypertension and kidney circulation are described. The author's case of nephro-omentopexy for the relief of hypertension in a 32-year-old patient, with recovery, is presented. Operative technic is described in detail. A bibliography is appended.

BIBLIOGRAPHY

Abrami, Iselin and Wallich: Attempts to Treat Arterial Hypertension of Renal Origin by Surgical Devascularization of the Kidney, Presse med. 47:137-139 (Jan.), 1939.

Bruger and Carter: Evidence of Communications between Renal and Omental Vessels Following Nephro-omentopexy for Arterial Hypertension in Man, Am. J. M. Sc. 197:832-833 (June), 1939.

Davis, H. A., and Tullis, I. F., Jr.: Effect of Experimental Production of Accessory Blood Supply on the Normal Kidney, Proc. Soc. Exper. Biol. & Med. 40:161-164 (Feb.), 1939.

Goldblatt, Lynch, Hanzal and Summerville: (a) Experimental Observations on Surgical Treatment of Hypertension, Surgery 4:480-483, 1938. (b) Studies on Experimental Hypertension: Pathogenesis of Experimental Hypertension due to Renal Ischemia, Ann. Int. Med. 2:69-103, 1937.

MacNider and Donelly: Value of Omentopexy in Establishing Adventitious Circulation in the Normal Kidney, Proc. Soc. Exper. Biol. & Med. 40:271-272 (Feb.), 1939.

Mansfield, Weeks, Steiner and Victor: Reduction of Experimental Renal Hypertension by Pexis of Spleen or Omentum to the Kidney, Proc. Soc. Exper. Biol. & Med. 40:708-709 (April), 1939.

RÉSUMÉ

Nephro-omentopexie pour le soulagement de l'hypertension

Des récherches expérimentales dans le champ de l'hypertension et de la circulation reinale sont décrites. Le cas de nephro-omentopexie de l'auteur pour le soulagement de l'hypertension dans un malade de 32 ans, avec guairison, est présenté. La technique opérative est décrite en détail. Une bibliographie est attachée.

ZUSAMMENFASSUNG

Nephro-Omentopexy zur Behebung von Hypertension

Experimentelle Untersuchungen in dem Gebiete der Hypertension und des Nierenkreislaufes werden beschrieben. Der Autor stellt einen Fall von Nephro-Omentopexy zur Behebung von Hypertension in einem 32-jährigen Patienten, mit Genesung, vor. Die Technik der Operation wird genau beschrieben. Eine Bibliographie ist beigefügt.

SUMARIO

El aligeramiento de la hipertensión por la nefro-ligamentopexia

Se describen las investigaciones experimentales in el campo de la hipertensión y en la circulación de los riñones. El autor presenta un caso de nefro-ligamentopexia en un paciente de 32 años de edad en el cual se aligeró la hipertensión. La técnica operatoria se describe con detalle. Se anexa una bibliografía.

RIASSUNTO

Nefro-omentopessi per l'alleviamento dell'ipertensione

Ricerche sperimentali nel campo dell'ipertensione e della circolazione renale vengono descritte. Vien presentato il caso di nefro-omentopessi dell'autore per l'alleviamento dell'ipertensione in un paziente di 32 anni, con guarigione. La tecnica operativa è descritta dettagliatamente. Una bibliografia è annessa.

Periarteritis Nodosa

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IN 1852 Rokitansky noted the presence of peculiar nodules upon the coronary and mesenteric arteries of a man dying rather suddenly with symptoms of dysentery. The tissues which Rokitansky studied only in the gross were studied microscopically thirty-five years later by Eppinger in conjunction with a museum specimen twelve years old. He reported both to be instances of periarteritis nodosa.

TERMINOLOGY

Periarteritis nodosa, however, was first accurately described by Kussmaul and Maier in 1866. As the name implies, it is an inflammatory disease of the perivascular structures. The process may be very acute or somewhat chronic. The duration of the illness is from one day to about five months. It is always fatal. The synonymous names, "polyarteritis" and "panarteritis," employed in the description of this disease process signify that, as a rule, the affection is widely distributed throughout the body. A more descriptive name, "periarteritis nodosa aneurysma thrombotica," was suggested by Harris and Friedrichs, as being a more accurate pathologic description than "periarteritis nodosa." It is now suggested that the name should not be further extended, but if possible simplified.

Periarteritis nodosa is an acute or chronic infectious inflammatory disease caused by bacterial activity and is characterized by definite pathologic lesions. These comprise, first, polymorphonuclear infiltration of the media and adventitia, chiefly of the medium-sized muscular arteries, with subsequent necrosis of the media, formation of small aneurysma, extension into the intima, producing destruction of endothelium with formation of thrombi, frequently attended by rupture of the vessel wall and consequent hemorrhage.* The thrombi lead to the formation of local infarction. The minute pathology and results of infarction are so well understood as to call for no further explanation. It is well known that areas of infarction are prone to undergo softening and liquefaction. Recovery would appear to be possible even with so serious an involvement of important structure, yet early death seems to be the inflexible rule.

The cause of the disease has not been definitely determined. The cause of death is the softening and consequent yielding of the infarcted area lodged in an important vessel.

PATHOLOGY

The likeness of the pathology to tubercular processes is not fanciful. The formation of nodes (tubercles), the degeneration or necrosis with ulceration of the nodal structure, the formation of thrombi, infarction, necrosis of the infarction with hemorrhage, offer, to say the least, a striking similarity to the process in tuberculosis. The multiple manifestations of this disease, known to affect practically all the tissues and organs, even the skin, are further suggestive of both syphilis and tuberculosis. The purpose of these comparisons is not to suggest either condition as the cause of periarteritis nodosa but to emphasize that it is caused by activity of some bacterial agency.

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*Adapted from Meakins, Practice of Medicine, p. 443.

The terms "panarteritis" and "polyarteritis" explain the most striking characteristic of the disease, that is, its multiple lesions. The media at first is involved in a degenerative process akin to that of an arteriosclerosis. The smaller vessels supplying the muscular and nervous systems appear to be the most frequently affected at the early stage; however, practically all of the vital organs may be involved. The multiplicity of the areas of degenerative changes in the media of the smaller arteries explains the multiplicity of symptoms.

The areas involved determine the symptomatology, which may accordingly be suggestive of conditions of the vessels of the brain, the peripheral nerves, the kidneys, the liver, the intestinal wall, the mesenteric vessels, the glands (testicle) or skin. The complexity of the disease is well said to be protean. The confusion of symptoms is explained by the multiplicity of coexisting lesions in various important structures.

The literature of periarteritis nodosa is extensive, including reports of approximately 200 cases. The disease is said to be rare. The diagnosis in life is difficult and clinically is made accurately in not more than 15 per cent of all cases. Diagnosis is frequently overlooked simply because the practitioner is not familiar with the multiplicity of symptoms. A biopsy for diagnosis is conclusive, yet it is difficult and often impracticable to find and remove safely material for examination. Diagnosis is usually established by autopsy. In the interests of science autopsy should be performed wherever possible. The vessels should be submitted to close gross and accurate microscopic study.

CASE REPORT

The author's case will serve to illustrate the difficulty in making a correct diagnosis in life. The hospital record revealed the following facts:

HOSPITAL RECORD

King's Daughters Hospital, Case No. 14227, *Staunton, Virginia.* The patient was a white male, age 61. Married at the age of 35, he was separated (wife insane) and had no children.

He was first seen on March 18, 1939, one week after onset. An eruption on the legs was accompanied with pain and swelling of the ankles. Physical examination was negative except for petechial eruption on the legs.

His father had died suddenly at 72; his mother at 85; causes of their deaths were not known. Three living brothers were in fair health. One, 68, was not well. Two brothers were dead, one at 68 and one at 72, both of heart disease. Three sisters, 60, 66 and 72, all in good health. Two sisters had died at 62 and 70 of unknown causes.

His past history revealed only the usual diseases of childhood. The right leg had been fractured four years before. He had had no operations. Except for the use of tobacco his habits were exemplary.

March 20, 1939. Complaint: Severe pain of the left index finger, bloodless, sensation lost to end of finger. Impression: "A vascular disease of the left index finger."

March 23. Complaint: Severe pain and exquisite tenderness of the left testicle; gland not swollen.

March 24. Elevation of temperature with abdominal pain to the left of and below the umbilicus.

Physical examination revealed the abdomen to be distended. There was tenderness over the right and left iliac regions with no muscular guard and severe pain in the calf of the left leg. Sensation of the finger was improved. The testicle was painful and tender. There were nausea, emesis, reddish fluid, perspiration at night. Impression: Vascular disease.

On March 28 he was admitted to the hospital. A large amount of dark brown fluid was vomited. Pressure was negative. Wangensteen was of striking benefit.

Laboratory reports showed the heart, blood pressure and lungs clinically negative; blood pressure not elevated; repeated blood cultures negative.

March 28. The left foot was pallid, cold and numb, with some cyanosis about the great toe. The incessant emesis was relieved by the Wangensteen tube. (N. P.)

April 1. Increasing distention in the upper abdomen was accompanied by emesis, discharge of bloody mucus with unusually profuse stool. Negative pressure was resumed. Glucose salt given subcutaneously.

April 5. Distention and emesis were relieved. Negative pressure was discontinued. Coils of intestinal patterns were visible in the right upper abdomen. The condition was unquestionably improved; expression was better.

April 10. Exfoliation of the area of circulatory distribution of the left index finger was accompanied by pain, tenderness and pallor. The abdomen was flat but with visible patterns of intestinal coils persisting.

April 22. Examination showed loss of sensation, flexion, extension and lateral movements of left ankle, toes and foot. Impression: Affected vascular supply to nerve involved.

April 26. Except for slight dizziness there were no phenomena. A slight movement of the left foot, toes and ankle was noted. The peroneal and extensor muscles were involved. Sensation was lost from the tibial tubercle to the middle outer third of the leg. At the middle third sensation was lost to touch, heat and cold. The lower third of the leg was less involved. Sensation of the dorsum of the foot was less affected than of the leg. Impression: Peripheral nerve vascular supply involved.

Cardiograms showed a regular rate of 92 per minute for both the auricles and ventricles. The rhythm is a normal sinus one. PR interval .02 seconds. QRST interval .08 seconds. Direction of the electrical axis was normal The voltages of the auricular complexes were normal, those of the ventricular low, indicating a poor condition of the myocardium. There were no evidences of sclerosis or thromboses. It will be noted that the rate of the auricular impulse was at the extreme limit of normal, indicating either an enlargement of the auricle or poor conductivity from the sinus to the auricular-ventricular node.

Combined fluoroscopic and roentgenographic examination showed a cow-horn type stomach located normally in the epigastrium. There were no evidences of filling defects, ulcers, tumors or malignancy and no obstructions. Peristaltic activity was normal with a correspondingly normal emptying time There was no free air or gas in the peritoneal cavity.

A 24-hour examination showed the barium contained in the colonic tract from the cecum to the rectal ampulla There was no deformity of the colonic tract and no evidence of kinking, adhesions or growths. At the time of examination there was no abdominal tenderness.

Roentgenologic examination for gastrointestinal pathology was negative.

Complete laboratory findings showed the hemoglobin to be 82-87 per cent; the red blood count 4,100,000 to 4,790,000; therefore, no decided anemia. The white blood count at onset was 17,050; nonfilamented cells 15 per cent; filamented 53 per cent; lymphs 15 per cent, monocytes 2 per cent, eosinophils 17 per cent During the abdominal crisis, the leukocyte count rose to 29,900, with a nonfilament count of 18-20 per cent. The eosinophil count continued high

The daily urine output dropped to 450 cc The urine examination at this time showed specific gravity 1,021, albumin 3+, sugar 0, much mucus, renal epithelial cells, frequent coarsely granular casts, frequent r.b c and 4-6 pus cells per h.p.f As the acute abdominal condition improved, the daily urine output increased to 2,400 cc. and both the chemical and microscopic examinations showed essentially normal findings

The blood chemistry was essentially normal, the blood calcium was reduced (8.5) Repeated blood cultures were all negative. No malarial organism was present. Wassermann, typhoid, paratyphoid and undulant fever agglutination tests were all negative. The gastric analysis, using material obtained by the tube, showed the presence of free hydrochloric acid within normal limits

The high leukocyte count was attended by a high nonfilament count, and a high eosinophil count When the leukocyte count dropped to 8,250, the nonfilament count remained high (21 per cent) and the eosinophilia persisted (8 per cent) This finding is of prognostic value

Accurate observation over some four years leads me to conclude that a marked leukocytosis with a high nonfilamented count, 16 per cent or more, is a faithful index to acute infection. A low leukocyte count, 7,000 or less, with a high nonfilamented count is a reliable index to tubercular activity. Experience may add something of diagnostic and prognostic value to this observation.

The highest temperature recorded was on the tenth day (100.5 F.) and the highest pulse rate was 132. The temperature, pulse and respiratory rates then rather promptly subsided and remained, with some variations, substantially normal throughout the period of hospitalization.

On August 4, 1939, while visiting in Newport News, Virginia, our patient became violently sick, was operated upon and died shortly thereafter. The acute illness began an hour after lunch with violent abdominal pain about the umbilicus. The pain became generalized, radiating to the bladder region. He vomited coffee-ground material. Tenderness about the umbilicus and the region of the lower abdominal muscles, especially on the right side, was noted. A diagnosis of perforated peptic ulcer was made. The abdomen was opened and a generalized peritonitis found with undigested food particles scattered throughout. A peculiar rounded perforation, about 1 cm. in diameter, with dark indurated edges, resembling a bullet hole, was found in the ileum. The perforation was sutured. The pain was the most intense I have ever seen. The amount of pathology in the abdomen was striking.

Autopsy was limited to the peritoneal cavity and its contents. The report is quoted below:

AUTOPSY REPORT

Peritoneal Cavity and Its Contents.—The peritoneal surfaces are dull and lusterless in appearance and show fibrinous exudate throughout. Several masses of undigested food are seen at several points The loops of the small intestine are adherent to one another, being united by fibrinous exudate They can be separated rather easily and show no point of intestinal obstruction At a point 9 feet from the ileocecal valve two constrictions with kinking are seen in the ileum These are 6 inches apart Rupture of the wall of the intestine has occurred at one of these points and the perforation is closed adequately by suture material. Six inches from the last constriction a diverticulum of the small intestine is found, with the sac extending into the mesentery instead of on the free surface The sac measures 5 cm. in diameter. The opening from the ileum into the sac measures 2 cm in diameter The two constrictions described and the diverticular area are attached at a common point in the pelvis just back of the bladder. Omentum is also attached to this point. Where the intestine is removed the walls are found to be friable and are easily torn. The stomach is dilated but is otherwise normal in appearance. The duodenum and jejunum are normal. No abnormalities are seen in the large intestine. The liver is normal in size and shape. The surface is granular and shows a small amount of fibrinous exudate. On section the cut surface is normal in appearance. The spleen is normal in size and shape. On section the splenic tissue is softened. The adrenal glands are normal. The kidneys are decreased in size. The capsule of each is adherent and when removed granular surfaces with retracted areas are noted. On section the cortex is narrowed at several points and the kidney markings are indistinct. An increase of pelvic fat is present with a resulting decrease in total kidney width. The pelves and ureters are normal.

Pathologic Findings.—(1) General peritonitis (acute). (2) Sutured perforation of small intestine (ileum). (3) Diverticulum of the small intestine. (4) Constriction of the small intestine. (5) Arteriosclerotic nephritis. (6) Operative incision of the abdominal wall.

Microscopic Findings.—Sections of the diverticulum show it to be similar to the intestine. No evidence of gastric glands are seen. Sections of the constricted areas show acute and chronic inflammatory reaction.

SURGICAL INTERFERENCE

The place of surgery in the treatment of periarteritis nodosa may next be considered. It has been pointed out by all writers on the subject that the diagnosis of periarteritis nodosa is extremely difficult, and that it is often impossible to make a conclusive, accurate diagnosis. We quote:

> The pathologic process in the vessels in this disease may be divided into four stages: acute, subacute, chronic and healed. The first and last stages are not commonly seen and in most cases the arteries are observed in the subacute and chronic stage; the classical is that seen during the chronic stage of the disease process. The disease begins as a mesarteritis of the smaller arteries and arterioles; sometimes larger vessels may be involved, but this is not common. The initial lesion is a necrosis of the inner or outer portions of the media; the portion involved depends on the presence or absence of vasa vasorum. Following the necrosis, polymorphonuclear leukocytes invade the necrotic tissue; inflammation or extension of the necrotizing process spreads to the adventitia and a periarteritis develops; simultaneous with the extension outward is extension inward, and a necrosis of the internal elastic lamina ensues. This is the subacute stage of the disease and during this period of development aneurysmal dilatations may form due to weakness of the walls; however, most frequently an endarteritis or proliferation of the intima takes place with narrowing or occlusion of the lumen of the vessel. It is this narrowing or even complete occlusion of the vessel that produces symptoms usually caused by infarction of the tissue whose blood supply has been cut off.
>
> The subacute stage is gradually transformed into the chronic stage by lymphocytes replacing the polymorphonuclear leukocytes and by the proliferation of the fibroblasts. Rarely do foreign body giant cells appear in the lesions of periarteritis nodosa, but usually the lesion spreads widely into the surrounding tissues. Gradually healing takes place, the lymphocytes disappear and are replaced by connective tissue; the internal elastic lamina reforms and very frequently it is increased in amount; there is an organization and maybe even a canalization of the intima. Histologic diagnosis at this stage of the disease is very difficult, but one of the characteristics of the disease is the occurrence of remissions and exacerbations, and thus earlier and more characteristic lesions are usually encountered. In the vessels involved by the disease process the lesions are sharply limited to a small segment of the artery, while the wall is normal above and below the arteritis. Only a small number of vessels were involved in any one case; sometimes the disease was much more widespread than in others.*

In lesions of so involved, multiple and disseminated a character, it is prudent to withhold surgical interference. The most skilled may find safe operative accomplishment impossible of complete execution, and therefore harmful rather than helpful. A close study of the history and autopsy findings in the case here reported confirms the statement of a consultant in the case that "the condition was so widespread that no helpful operative interference could be safely completed."

Treatment is limited to the management of well-defined indications. Surgical interference should be unhesitatingly employed when indications are imperative and the conditions warrant safe procedures. In the case here reported life might have been prolonged should the then thoroughly indicated abdominal operation have resulted favorably.

The results following surgical interference for acute complications in fulminating periarteritis nodosa have proved uniformly disappointing. X-ray studies in the case here reported showed negative intestinal pathology; hence, final conclusion of perforative lesion due to infarct, rather than diverticulitis. The study must embrace constructive, differential and eliminative diagnosis, sustained by deductive and inductive reasoning.

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*Washington Institute of Medicine, personal research.

The extent and location of the various lesions determine the outcome. In the event of relief or apparent recovery, the physician must be armed to expect a sudden relapse attended by a quick calamity, as in the case reported. This is always a fatal disease. The learned consultant in this case insisted that the condition was none other than multiple bacterial emboli, whose source he was not certain of, and that too in light of negative blood culture findings and unaffected heart.

DIAGNOSIS

The absence of a true endarteritis in the early stages of periarteritis nodosa is an important diagnostic consideration. Should the endocardium or the intima of vessels be involved, multiple emboli would probably be widely distributed.

The accurate diagnosis of periarteritis nodosa in life is difficult though not impossible (15 per cent). There are no pathognomonic signs and symptoms. Eosinophilia is not conclusive, inasmuch as it occurs only in about 12 per cent of all cases. The symptom complex is mixed, changeable and confusing. Biopsy is conclusive, should an affected artery suitable for removal be found. The exact cause is now not known. The prognosis is inflexibly bad.

In the light of the above experience, three cases treated in the past now appear to me to have been diagnosed inaccurately as acute degenerative vascular disease. In two of these cases a man and his considerably younger wife were afflicted at the same time, the wife surviving some four months. Both presented notably similar unusual, complex, multiform manifestations of vascular disease. The third case manifested unusual, multiple and confusing spinal cord and peripheral nerve involvement, attended by marked acute vascular disease—the blood vessels showing rapidly developing palpable beading. All of these three patients died within five months of onset.

The constructive diagnosis in the case reported above was based on a petechial rash, infarct of the skin, involvement of the vessels of finger, testicle and epididymis (21), abdominal crisis (41 per cent), high leukocytosis, high nonfilament count, eosinophilia (constant evidence), renal involvement, muscular pains (36 per cent), electrocardiogram showing poor conductivity from the sinus to the auricular ventricular node (blood vessel changes) (71-73 per cent), frequent r.b.c., cast and renal cells in urine, persisting eosinophilia (8 per cent), nonfilament count (21 per cent) with a leukocyte count of 8,250, a motor sensory paralysis of the left leg, peculiar mixed peripheral complex sensory manifestation (vascular), intestinal rupture in an unusual location and death. Perforation of some viscus is a frequent cause of death in periarteritis nodosa.

The eliminative diagnosis was based on negative blood cultures, absence of endocarditis (no bruit), negative lungs, precluding multiple emboli, negative Wassermann, negative various agglutination tests for specific fevers, negative history of rheumatism and exclusion of other diseases which would have further involved the diagnosis.

It is regrettable that the pathologic examination failed to include the renal (80 per cent)* and coronary vessels (70 per cent).* The coronary vessels, as a rule, are early involved. It is difficult to determine coronary and renal vessel involvement, certainly in the early stages.

The surgeon may well bear in mind that the usual location of intestinal diverticula is the sigmoid and the colon. Diverticula of the colon and sigmoid are found on the free aspect of the bowel, that is, distal to the mesocolon. Diverticula of the small intestine are relatively rare; when present, they are found "at the mesenteric border from which they extend into the mesentery."**

In the author's case the origin, cause and development of the diverticulum which extended into the mesentery may best be explained by the theory of Graser, that "diverticula are the result of a weakening of the intestinal musculature, due to an increase of the local venous pressure and vascular stasis." In this case the theory is that, as a result of a panarteritis involving the small intestinal vessels, a stasis followed by formation of a thrombus and, in consequence, a concomitant infarction of the intestinal wall with softening of the infarcted area occurred; this was later attended by a pathologic rupture or perforation of the free side of the intestinal wall. The acute perforation of this area was due to the sudden increase of intestinal pressure superinduced by the heavy meal. This conclusion explains the abdominal crisis of March 29, 1939. That the intestinal wall was weakened prior to the actual perforation is an incontrovertible conclusion. That the weakened intestinal wall, at the indurated site of the perforation and the diverticulum, was due to blood vessel disease, resulting in a stasis, a thrombus and a concomitant infarction with softening and perforation of the affected area, is a logical conclusion. Finally, the unusual phenomena in this case may be explained by panarteritis.

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*Robert L. Levy.

**Nelson's Surgery, 5: 294, 295.

SUMMARY

Periarteritis nodosa is an acute or chronic inflammatory disease of usually the medium-sized muscular arteries, due to bacterial activity, probably nonspecific, however, with a duration of from one day to about five months. The diseased process begins in the media as a necrosis, the thrombosing extends toward both the intima and the adventitia. Concomitant infarction with softening of the affected area gives rise to characteristic pathological changes.

The absence of a true endarteritis in the early stage is a differential diagnostic finding. There are no pathognomonic signs and symptoms. The exact cause is unknown and the clinical diagnosis is difficult. The protean complexity of the disease is explained by the multiplicity of coexisting lesions in various important vascular structures. A comprehensive diagnosis is necessary to guard against untimely surgical interference in the presence of acute complications. The ultimate prognosis is uniformly a fatal outcome. The surgical treatment is limited to the management of well-defined indications.

BIBLIOGRAPHY

(The source of this bibliography is the libraries of the American College of Surgeons, the American Medical Association and the Washington Institute of Medicine.)

Cabot case 21461 Periarteritis Nodosa of the Coronary Arteries, New England J Med 213 984 (Nov 14), 1935

Cabot case 24201 Periarteritis Nodosa Acute Disseminated Lupus Erythematosus, New England J Med 218 838 (May), 1938

Cabot case 25141 Periarteritis Nodosa New England J Med 220 600 (April 6), 1939

Cleland, J B Periarteritis Nodosa, with Report of Two New Cases, M J Australia (May 14), 1938, p 846

Clinical Pathological Studies Periarteritis Nodosa, Staff Meet, Bull Hosp, Univ Minnesota, vol 9 (Oct 8), 1937

Curtis, A C, and Coffey, R M Periarteritis Nodosa, Brief Review of the Literature and a Report of One Case, Ann Int Med 7 1345 (May), 1934

Harris W H, and Friedrichs, A V Periarteritis Nodosa with a Classification of the Pathology, J Med Res, vol 13 (June July) 1922

Harris, W H, and Friedrichs, A V The Experimental Production of Periarteritis Nodosa in the Rabbit with a Consideration of the Specific Casual Excitant, J Exper Med (Aug 1), 1922

Keegan, J J Primary Vascular Nephritis or Renal Periarteritis Nodosa, Arch Int Med 36 189 (Aug), 1925

Kernohan, J W, and Woltman, H W Periarteritis Nodosa, Proc Staff Meet, Mayo Clin 12 554 (Sept 1), 1937

Troutman, W B Case of Periarteritis Nodosa with Autopsy Findings, Kentucky M J 29 144 (March), 1931

RÉSUMÉ

Periartérite nodeuse

La periartérite nodeuse est une maladie aigue ou chronique generalement des artères musculaires de moyenne grandeur, due à activité bacterique, pourtant probablement pas specifique, avec une durée de un jour à presque 5 mois. Le procès morbide commence dans la media sous forme de nécrose, l'agent thrombizant s'extende soit vers l'intime que vers l'avventice. L'infarction que l'accompagne avec rammoliment de la partie malade fait naître les alterations pathologiques caracteristiques. L'absence d'une vraie endoartérite dans les phases précoces est une découverte diagnostique differentielle. Il n'y a pas des signes pathognomoniques ou symptômes. L'exacte cause n'est pas connue et la diagnose clinique est difficile. La pro-

téiforme complexité de cette maladie est expliquée par la multiplicité de lesions coexistentes en diverses structures vasculaires importantes. Une diagnose compréhensive est necessaire pour se garder d'une intervention chirurgicale avant le temps en presence de complications aiguës. Le dernier prognostique est uniformement résultat fatal. Le traitement chirurgical est limité au contrôle de indications bien definies.

ZUSAMMENFASSUNG

Periarteritis nodosa

Periarteritis nodosa ist eine akut oder chronisch entzündliche Erkrankung, meistens der Muskelarterien von mittlerer Grösse, hervorgerufen durch, jedoch scheinbar unspezitische, Bakterien, mit einer Dauer von einem Tag bis um fünf Monate. Die Erkrankung beginnt mit einer Nekrose der Media, die Thrombosierung erstreckt sich beiderseits gegen die Intima und Adventitia. Concomitierende Infarktbildung mit Erweichung der befallenen Region, ruft die charakteristischen pathologischen Veränderungen hervor.

Das Nichtvorhandensein einer wahren Endarteritis in den frühen Stadien ist ein differentialdiagnostischer Befund. Es gibt keine pathognonomischen Zeichen und Symptome. Die eigentliche Ursache ist unbekannt und die klinische Diagnose schwer. Der leicht veränderliche Komplex dieser Erkrankung, wird durch die Vielfältigkeit der gleichzeitig vorhandenen Lasionen in den verchiedenen wichtigen Gefäss-strukturen, erklärt. Eine genau umfassende Diagnose ist notwendig, um bei Vorhandensein von akuten Komplikationen vorzeitigen chirurgischen Eingriff zu vermeiden. Letzenendes ist die Prognose eindeutig eine letale. Die Chirurgie ist auf die Behandlung von genau begrenzten Indikationen beschränkt.

SUMARIO

La periarteritis nudosa

La periarteritis nudosa es una enfermedad e inflamatoria aguda ó crónica que usualmente se presenta en la túnica media muscular de las arterias, debido a una actividad bacteriana probablemente no específica, que tiene una duración de un día a cinco meses. El proceso de la enfermedad empieza en la túnica media como una necrosis, la trombosis se extiende hacia la interna y la adventicia. La infartación concomitante con reblandecimiento del área afectada da un aumento en los cambios patológicos característicos. La ausencia de una verdadera endoarteritis en el estado temprano es un diagnóstico diferencial encontrado. No hay signos patognómonicos y sintomas. La causa exacta es desconocida y el diagnóstico clínico es difícil. La complexidad variable de la enfermedad es explicada por la multiplicidad de las lesiones coexistentes in varias estructuras vasculares importantes. Es necesario un diagnóstico inteligente para prevenir una intervención quirúrgica antes de tiempo cuando se presentan las complicaciones agudas. El pronóstio final tiene un resultado fatal uniforme. El tratamiento quirúrgico se limita al empleo de las indicaciones definidas.

RIASSUNTO

Periarterite nodosa

La periaterite nodosa è una malattia acuta o cronica generalmente delle arterie muscolari di medio calibro, dovuta ad attività batterica, probabilmente non specifica, però, con una durata da un giorno a circa 5 mesi. Il processo morboso comincia nella media sotto forma di nefrosi, l'agente trombizzante si estende sia verso l'intima che l'avventizia. L'infarto che si associa con rammolimento dell'area affetta dà origine alle alterazioni patologiche caratteristiche. L'assenza di una vera endoarterite negli stadi precoci è un reperto diagnostico differenziale. Non vi sono segni patognomonici o sintomi. La causa esatta è sconosciuta e la diagnosi clinica è difficile. La proteiforme complessità di questa malattia è spiegata dalla molteplicità di lesioni concomitanti in diverse strutture vascolari importanti. Una diagnosi comprensiva è necessaria per stare in guardia contro intervento chirurgico fuori tempo in presenza di complicazioni acute. La ultima prognosi è uniformemente esito fatale. Il trattamento chirurgico è limitato al controllo di indicazioni ben definite.

ASAMBLEA INTERNACIONAL DE CIRUJANOS

CIUDAD DE MEXICO, 10 AL 14 DE AGOSTO DE 1941
(A INVITACION DEL GOBIERNO MEXICANO)

COMITE DE ORGANIZACION

DIRECCION POSTAL: AVE. TAMAULIPAS 60-MEXICO, D. F.

El Consejo Ejecutivo Internacional de Cirujanos, ha acordado la iniciación de los trabajos preparatorios de su próxima Asamblea Internacional de Cirujanos, que tendrá lugar en la ciudad de México del 10 al 14 de agosto de 1941, a invitación del Gobierno Mexicano. Se ha designado para el caso un Comité Científico de Programa, constituído en la forma siguiente: Presidente, Dr. Desiderio Román, Filadelfia, E. U. A.; Miembros: Dr. Manuel A. Manzanilla, México, D. F. México; Dr. Rudolf Nissen, Estambul, Turquía; Dr. Raffaele Paolucci, Roma, Italia; Dr. Mario Dogliotti, Catarina, Italia, Dr. Félix Mandl, Jerusalén, Palestina; Dr. Y. Seuderling, Helsinski, Finlandia; Dr. Arnold Jirasek, Praga; y Dr. J. C. McCracken, Shanghai, China. Asimismo, fué designado un Comité de Organización con sede en la ciudad de México, constituído en la forma siguiente: Presidente, Dr. Manuel A. Manzanilla; Vicepresidentes, Dres. Miguel López Esnaurrízar y Darío Fernández Fierro, y Secretario, Dr. Francisco Fonseca García. Este último Comité, de conformidad con sus atribuciones oficiales, características universales y fines al mejor éxito, ha procedido a crear cinco Comisiones de gran importancia: Actos y Ceremonias. Recepción, Hospitales, Turismo y Damas, estando integradas las tres primeras por eminentes cirujanos mexicanos miembros del Colegio, la cuarta por las más destacadas personalidades encargadas oficialmente del Turismo, y la quinta por las señoras esposas de los cirujanos mencionados.

La Asamblea Internacional contará con tres clases de miembros, a saber: miembros del Colegio en sus diversos grados, asistentes oficiales y asistentes ordinarios; los miembros del Colegio y asistentes oficiales se consideran exentos de los derechos de inscripción. Anexa a la Asamblea se efectuará una Exposición Científica y Comercial de primer orden. Informaciones y trámites a cargo del Dr. Max Thorek, Secretario General Ejecutivo del Colegio, 850 W. Irving Park Boulevard, Chicago, Ill., E. U. A., y del Dr. Francisco Fonseca García, Secretario del Comité de Organización, Regina 23, México, D. F.

Atentamente

DR. FRANCISCO FONSECA GARCIA
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Suction Cataract Operation

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It is curious and interesting to review the progress made in cataract surgery during the past twenty years, to mark what important developments have taken place and to speculate as to what future developments will be. Progress in the science and art of surgery is the highest responsibility with which the surgeon is charged. This responsibility must be assumed without fear or favor and must be exercised with the utmost regard for the consequences to the patient and with no regard whatever for the consequences to the surgeon, his career, his convenience or his personal advantage. This is the real ethical creed of the true surgeon.

To those familiar with the problems of cataract surgery there is no doubt that here the path of progress lies in the direction of further perfection, simplification and wider usage of intracapsular extraction.

THE BARRAQUER METHOD

Barraquer's method of utilizing a vacuum to remove cataracts in their entirety is the only important original technic to be perfected in the past twenty years. Although many surgeons still remain ingenuously bewildered at so radical a departure from older methods, it is well within the bounds of possibility that Barraquer's suction method of total cataract extraction may become the universal method of the future.

Although there is little disagreement as to the essential features of the suction technic, there is no unanimity in regard to the minor details and the manner of performing each maneuver. The size of the corneal incision, the type of iridectomy, the amount and manner of applying the vacuum, inversion or tumbling of the lens, the size and shape of the vacuum cup and the method of suturing the wound, are all matters of individual preference among the surgeons who use the suction technic.

Barraquer's original ideas regarding the importance of an interrupted or pulsating vacuum have been discarded. In my own extensive experience with the suction technic I have been impressed with the uselessness of tumbling or inverting the cataract into the anterior chamber. I have found that the contraction of the lens by the application of the suction cup, plus rotation of the lens in the plane of its equator in the patellar fossa without disturbing the vitreous, is sufficient to rupture the zonule in over 90 per cent of the operations. The cataract can then be easily delivered by slight traction with the suction end piece and gentle pressure on the cornea below.

Barraquer's contention that his technic has been criticized by many who have never really understood it nor properly performed it is emphatically true. I have encountered many ophthalmic surgeons who, although they had never performed an intracapsular suction cataract operation, did not hesitate to criticize and denounce the technic. Inertia and unfamiliarity ever work against the acceptance of any new method —even though its benefits and advantages seem self-evident. Even when a method is accepted, its proponents must continue to press its advantages in order to gain wider usage.

TECHNICS

Figures 1 to 5 illustrate one method of employing vacuum, or [illegible]

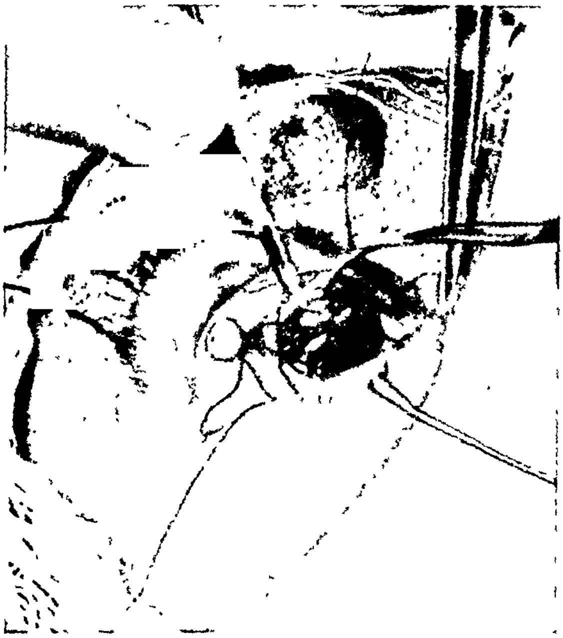

Fig. 1. Application of the suction cup to the anterior lens capsule. A limbal incision with conjunctival flap has been made, a continuous conjunctival suture has been placed, and an experienced assistant elevates the flap and the cornea with a forceps without producing *any distortion of the globe*. The surgeon applies gentle counterpressure with a ball-tipped forceps below. Note the retraction of the lids by means of sutures.

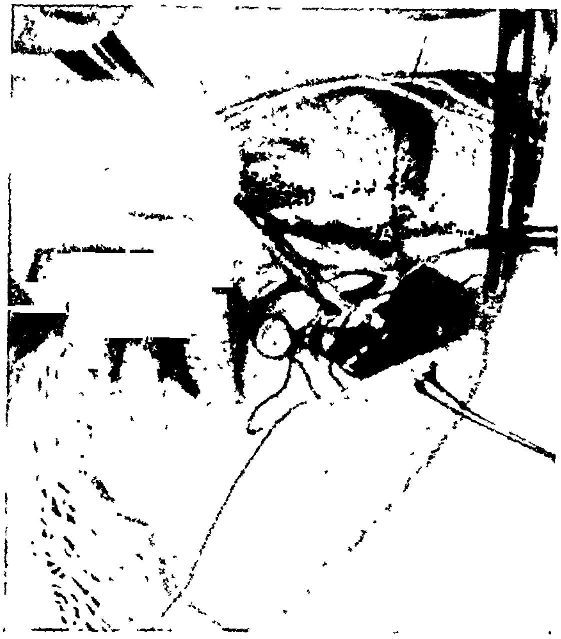

Fig. 2. Rotation of the cataract in the patellar fossa by rotating the suction end piece around an axis passing through the anterior and posterior poles of the eye.

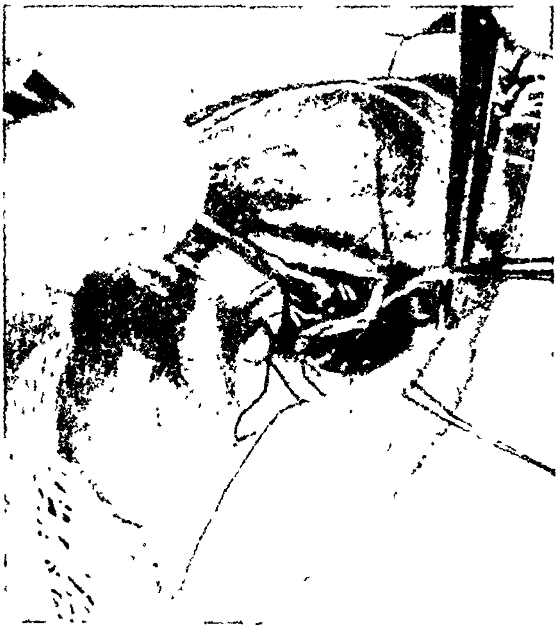

Fig 3 Delivery of the cataract by traction and counterpressure without distortion of the globe

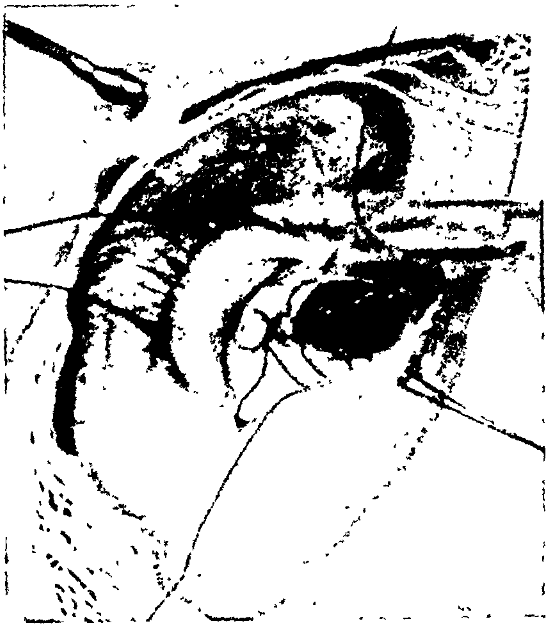

Fig. 4 The cornea and flap are replaced and counterpressure discontinued immediately on delivery of the lens.

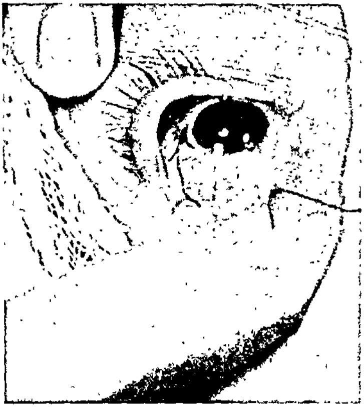

Fig. 5 Immediate wound closure by pulling taut the loops of the conjunctival suture Additional interrupted sutures may be added.

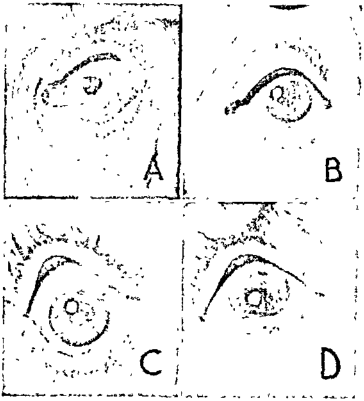

Fig. 6. Various types of iris incisions: A, total iridectomy; B, peripheral iridectomy; C, peripheral iridotomy; D, no iris incision.

an incipient senile cataract. Figure 6 shows various types of iris incisions.

The suction operation is the only intracapsular cataract technic in which the surgeon modifies and adapts certain maneuvers and a precise machine-controlled force to suit the stage, type and physical condition of the cataract. In all other types of cataract operations the technic is either designed for one particular stage of development or type of cataract, or it is most efficient in dealing with a certain stage of development or a certain type of cataract. One does not often encounter a patient with cataract in which all of the conditions considered ideal for a forceps extraction are present at the same time. The same is true of the conditions considered necessary for a satisfactory capsulotomy operation. In fact, the time-worn and evasive admonition, "Wait until your cataracts are ripe," has been so widely and extensively accepted that it is not at all unusual to see patients with glaucoma, optic atrophy and retinal vascular disease who have waited placidly, ignorantly and patiently until they became entirely blind before seeking a physician's advice about their eye troubles.

It will take time and effort to re-educate the public regarding this popular misconception. The entire profession can help to prevent and avoid a considerable amount of blindness by reiterating at every opportunity the fact that cataracts can and should be removed whenever they cause sufficient impairment of vision to interfere with the individual's social or occupational activities.

SUMMARY

The Barraquer suction technic for total extraction of cataract represents the outstanding achievement in cataract surgery of the past two decades. The first technic to utilize modern electrically driven mechanical precision instruments departs from the old principle of delaying operation until the cataract reaches an advanced stage of physical development.

Advantages of the suction technic are: (1) total removal of the cataract, thereby avoiding severe postoperative reactions and secondary cataract formation; (2) adaptability to any stage of development of senile and many other types of cataract, so that delay and consequent disability are avoided; (3) the overwhelming advantage of being adaptable to a greater variety of types and stages of cataract formation than the various intracapsular forceps technics.

RÉSUMÉ

Opération de la cateracte par aspiration

La technique de Barraquez pour la totale extraction de la cateracte par aspiration représente le plus important résultat dans la chirurgie de la cateracte pour les dernières vingt années. La première technique d'employer des modernes instruments mechaniques à precision actionnés par l'electricité, sort de l'ancien principle de retarder l'opération jusqu'à ce que la cateracte ait parvenu à une phase avancée de développement.

Les avantages de la technique par aspiration sont: 1) rémotion totale de la cateracte, en évitant dans cette manière des serieuses reactions postopératives et formation secondaire de cateracte; 2) adaptabilité à chaque phase de développement de cateractes seniles ou d'autre gendre, en évitant ainsi le retardement et l'incapacité conséquente; 3) le très grand avantage d'être adaptable à une plus grande varieté de gendres et phases de développement de la cateracte de ce que les diverses techniques avec pinces intracapsulaires ne fussent pas.

ZUSAMMENFASSUNG

Katarakt Operation mittels Saugung

Die Barraquer Saugtechnik für vollkomene Extraktion von Star, ist der grösste Erfolg in Starchirurgie, der letzten 20 Jahre. Das erste Verfahren, moderne, elektrisch betriebene, mechanische, präzisions Instrumente zu verwenden, weicht von den alten Prinzipien ab, die Operation aufzuschieben, bis der Star ein fortgeschrittenes Stadium physikalischer Entwicklung erreicht hat.

Die Vorteile der Saugtechnik sind: (1) Vollkomene Entfernung des Katarakt, wodurch schwere postoperative Reaktionen und sekundäre Kataraktbildung vermieden werden. (2) Anpassungsfähigkeit für jedes Entwicklungstadium von senilen und verschiedenen anderen Kataraktformen wodurch Verzögerung und folgende Arbeitsunfähigkeit vermieden werden. (3) Der überweltigende Vorteil einer grösseren Anpassungsfähigkeit für eine Verschiedenheit von Typen und Stadien von Kataraktbildung, als die verschiedenen intrakapsulären Techniken.

SUMARIO

Operación de las cataratas por succión

La técnica de succión de Barraquer para la total extracción de la catarata representa la realización sobresaliente en la cirujía en los dos ultimas decadas. La primera técnica para utilizar los instrumentos modernos eléctricos cuyo mecanismo es preciso, parten del viejo principio de demorar la operación hasta que la catarata alcánce un desarrollo físico avanzado.

Las ventajas de la técnica por succión son: (1) la total extirpación de la catarata, evitando de esta manera las reacciones postoperatorias severas y la formación de la catarata secundaria; (2) adaptabilidades a cualquier estado de desarrollo de la catarata senil y de otros muchos tipos, evitando de este modo la demora y la consecuente incapacidad; (3) la ventaja preponderante es la de ser adaptable a una major variedad de tipos ó estados de formación de la catarata que las diversas técnicas intracapsulares por medio de pinzas.

RIASSUNTO

L'operazione della cateratta mediante succhiamento

La tecnica di Barraquez per la totale estrazione della cateratta mediante succhiamento rappresenta il più importante risultato nella

chirurgia della cateratta per gli scorsi 20 anni. La prima tecnica di utilizzare moderni strumenti meccanici a precisione mossi elettricamente ha origine dal principio di posporre l'operazione fino a che la cateratta raggiunge uno stadio avanzato di sviluppo.

Vantaggi della tecnica mediante suzione sono: (1) rimozione totale della cateratta, eliminando in questo modo gravi reazioni postoperative e formazione secondaria di cateratta; (2) adattabilità a ogni stadio di sviluppo di cateratta senile o di ogni altro tipo, cosí che si elimina il posporre e la inabilità che ne deriva; (3) l'immenso vantaggio di essere adattabile ad una più grande varietà di tipi e stadi di formazione della cateratta di quel che non fossero le varie tecniche con pinze intracapsulari.

SPECIAL ASSEMBLY TRAINS

Reservations for travel and hotel accommodations should be made promptly by those planning to attend the International Assembly at Mexico City. Special trains will leave New York City and will stop at Chicago, St. Louis and other points.

Surgery of the Gallbladder[*]

GEORGE I. MILLER, M.D., F.I.C.S.

BROOKLYN, NEW YORK

SURGICAL art in gallbladder disease is primarily a diagnosis which excludes all other intra-abdominal visceral pathology.

The glycogen-storage function of the liver, determined by the dye-retention test and the glucose-tolerance test, is an established guide to a diseased gallbladder lesion.

Normally the elasticity of the gallbladder wall propels one ounce of bile for several hours into the intestine against the internal pressure and prevents stagnation. Secretion of abnormal bile from a systemic or portal focus of infection ascending through the bile ducts or lymphatic extension from associated viscera; toxic damage from drugs; eclampsia or intestinal obstruction; closure of the common duct by stone; tumor or stricture and metabolic states concerned with the liver or endocrine organs—all predispose to stagnation of bile and stone formation.

The filtering power of the liver, through its reticulo-endothelial system, is reduced according to the degree of infection. As the gallbladder wall loses its elasticity, it becomes a reservoir pouch and forever remains pathological.

If inflammation develops and adhesions form, the tumor is fixed and does not move with respiration, but there are pain and tenderness over the swelling between the right costal cartilage and the umbilicus. Surgical interference at this stage is indicated for drainage or removal of the gallbladder. Cramps and pain are not always indicative of calculi in the gallbladder and may be due to crowding of viscid mucus and thick bile into the cystic duct, causing obstruction. In some the local areas of inflammation produce hyperplasia and papillary growths, and many degenerate into cancer.

CASE REPORTS

During the past fifteen years, from February, 1924, to February, 1939, the combined surgical services at Unity Hospital operated on 762 patients for diseases of the gallbladder. Infections, edema, suppuration, gangrene or perforation of the gallbladder were surgical problems for immediate or delayed operation.

Age and sex.—The age range was from 14 to 82 years. About 16 per cent of the patients were males.

Seasonal occurrence.—Most operations were in the months of May, June and July; the next largest number were in August, September and October. During the following six months only about 60 per cent of the above total were admitted to the hospital for operation. Patients are less likely to have elective operations performed during the colder months, when there is a greater incidence of associated upper respiratory infections.

Previous attacks.—Ninety per cent of all patients gave a history of previous attacks of pain and discomfort in the epigastric and hepatic area, in many cases covering from two to fifteen years of medical treatment. Patients who gave a history of recurrent attacks were operated upon after the pain subsided.

Clinical observations.—Pain in the gastric and liver region radiating posteriorly and up the right shoulder or pain between the scapulae are typical symptoms usually treated medically, until recurrence of attacks definitely points to ingrained pathology in the gallbladder. When colicky pains become unbearable and very frequent or sudden jaundice, due to obstruction within the common duct, is accompanied by itching of the skin, characterized by scratch lines, surgery is indicated.

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[*] From the surgical services of the Unity Hospital, Brooklyn, N. Y.

The retention and absorption of bile pigment, stains on the blood plasma, skin, tissues, sclerae and mucous membranes denote a grave condition depending on the location of the obstruction.

X-ray plates taken after intake of dye failed to visualize calculi in many progressive, unsubsiding attacks of gallbladder lesions and were not relied upon for diagnosis in every case. Obstruction in or about the ampula of Vater is surgically better tolerated because the liver and gallbladder still function.

In common duct obstruction by stones, usually associated with a shrunken, damaged gallbladder, the liver is also damaged by functional deficiency and narrows the margin of operative safety. These cases must be approached with greater caution and with anticipation of possible postoperative complications, by performing a hippuric test or bromsulphalein or galactose liver function test and determining the bleeding time and the coagulation time of the blood. Patients whose blood requires longer than nine minutes to coagulate constitute an increased risk, owing to tendency to bleed and to probability of more injury to the hepatic cells. Transfusion of 500 cc. of whole blood before and after operation has a favorable effect on these cases. More hemoglobin is supplied, increasing the oxygen capacity of the blood. Intravenous injection of thromboplastin should be repeated daily if necessary. Administration of 10 per cent calcium chloride or calcium gluconate is of value; also subcutaneous or intravenous 10 per cent glucose solution (3,000 to 4,000 cc.) for several days before operation will make the patient a better risk. Patients admitted with high leukocyte count, empyema, gangrene and perforation of the gallbladder often showed higher temperature and palpable gallbladders. In these cases the onset of attack was several days before admission to the hospital and they were operated upon soon after consent was obtained.

In a recent case of a woman 62 years old the gallbladder was distended 12 by 7 inches, its wall was thick and gangrenous, partly enwrapped in omentum and contained many stones. Cholecystectomy was performed, and she made an uneventful recovery.

Punctate perforations in gallbladders are usually sealed by omentum, which prevents general peritonitis, so often a complication in perforated appendicitis.

Type of operations.—Cholecystostomy was performed in about 10 per cent of the cases; choledochotomy in 2 per cent; cholecystogastrostomy in two cases; cholecystduodenostomy in two cases.

In some cases operations were performed on other lesions at the same time. These were for inguinal and umbilical hernias, fibroid cervix, fibroid uteri, uteropexy, vaginal repair, duodenal ulcer. The appendix was frequently removed.

One patient was operated upon while eight and one-half and another while seven and one-half months pregnant. Pregnancy was not interrupted by the operation. During puerperium two patients had their gallbladders removed, on the seventh and nineteenth day respectively, with uneventful recovery.

Concomitant medical lesions were cardiac, nephritic, diabetic, arteriosclerotic, gastric and rheumatic conditions.

Undiagnosed before operation were two ecchinococcus cysts of the liver, two cases of carcinoma of the pancreas and liver, one omental cyst and visceral carcinomatosis.

With the exception of a limited number of cases a drain was placed in the bed of the gallbladder.

The method of electrosurgical obliteration of the gallbladder, so ingeniously practiced by Max Thorek, has come to our attention, for consideration and adoption, since it does not predispose to hemorrhage, thrombosis and embolism. The coagulation seals the opening of bile capillaries and ducts. The raw areas heal by encapsulation.

Anesthesia used was ether, mostly spinal.

Postoperative observations.—Average postoperative stay in the hospital was 14 to 22 days.

Sixty-one patients, or 8 per cent, died. Death occurred from one to six days postoperatively, from shock, mechanical, chemical, metabolic or infectious conditions. The death rate must necessarily vary with the severity of the lesion, the time which elapses before the patient submits to operation, the presence of additional systemic pathology and the power of resistance.

In the follow-up, young patients showed better results, with no recurrence of postoperative symptoms, than did patients past middle age.

Gallbladder infections are always accompanied by pathologic changes in the wall of the common duct and often in the hepatic ducts. Prognosis of postoperative cure must therefore be guarded. Many sections of gallbladder walls showed no definite microbic invasion, while the liquids revealed colon, pneumonia and typhoid bacilli in many of the examinations.

SUMMARY

Analysis of 762 patients operated upon for gallbladder lesions over a period of fifteen years revealed that most operations were in May, June and July; the next highest number in August, September and October. During the winter months only 60 per cent of the above number submitted to operation.

Ninety per cent gave a history of medical treatment for attacks of pain in the gallbladder area, reaching over a period of two to fifteen years.

Negative X-ray findings were not relied upon for diagnosis. The history and clinical findings proved to be the correct guide for operation.

Whole-blood transfusions before and after operation were frequently given to diminish shock and raise the power of resistance.

Cholecystostomy was performed during the first few years. After that cholecystectomy was always done.

Pregnancy is no contraindication for gallbladder operations.

Sections of gallbladder walls showed no definite microbic invasions, while the liquids revealed various types of bacilli.

Two gallbladders were removed by the electrosurgical method. They were not drained. Both made uneventful recoveries.

RÉSUMÉ

Chirurgie de la vésicule biliaire

Analyses de 762 malades operés pour lésions de la vésicule biliaire pendant une période de 15 années révélèrent que les mois dans les quels telles operations étaient prévalentes étaient Mai, Juin et Juillet. Près étaient Août, Septembre et Octobre. Un nombre plus petit de malades fut operé pendant l'hiver.

90% reportèrent une histoire de traitement médical pour attaques douloureuses dans l'aire de la vésicule biliaire pendant une période de 2 à 15 années.

Les reports radiologiques negatifs ne venaient pas pris en consideration pour le diagnostique. L'histoire et les données cliniques se démontrèrent être correcte guide pour l'operation. Transfusions de sang entier avant et après l'operation furent administrées souvent pour diminuer le shock et élever la resistance du malade.

Cholécistostomie fut accomplie dans ceux cas dans les quels les symptomes avaient été presents seulement pour peu d'années. Lorsque l'histoire était de plus long durée, cholécistectomie était toujours accomplie. La grossesse n'est pas une controindication pour operations sur la vésicule biliaire.

Sections des parois de la vésicule biliaire ne démontrèrent pas une claire invasion microbienne, tandis que les liquides révelèrent differents types de bacilles. Deux vésicules biliaires furent enlevées avec la méthode electrochirurgicale et ne furent pas drainées. Les deux malades guerirent normalement.

ZUSAMMENFASSUNG

Chirurgie der Gallenblase

Analyse von 762 Patienten an denen eine Gallenblasenoperation vorgenommen wurde zeigte, dass in der überwiegenden Anzahl der Falle die Monate May, Juni und July der Zeitpunkt der Operation waren. An nächster Stelle kamen die Monate August, September und Oktober. Ein kleiner Prozentsatz der Patienten unterzog sich der Operation während der Wintermonate. In 90% der Fälle ergab die Krankengeschichte medizinische Behandlung wegen Schmerzattacken in der Gallenblasenregion, von zwischen 2 bis 15 Jahren.

Von negativen Röntgenbefunden wurde kein Schluss auf die Diagnose gezogen. Die Krankengeschichte und der klinische Befund erwiesen sich als richtige Wegweiser zur Operation. Transfusion von frischem Blut, vor und nach der Operation wurde oft vorgenommen um den Shock zu vermindern und die Widerstandskraft des Patienten zu erhöhen.

Bei jenen Patienten deren Symptome erst seit wenigen Jahren bestanden wurde Cholecystostomie vorgenommen. Wenn die Symptome von längerer Dauer waren wurde immer Cholecystectomie ausgefuhrt. Schwangerschaft ist keine Kontraindikation zur Gallenblasenoperation.

Die Wand der Gallenblase zeigte keine bestimmte Bakterieninvasion während die Galle verschiedene Arten von Bakterien aufwies. Zwei Gallenblasen wurden auf elektro-chirurgischem Wege entfernt und wurden nicht draniert. In beiden Fällen erholten sich die Patienten ohne Zwischenfall.

SUMARIO

Quirurgia de la vejiga de hiel

Se efectuó una analisis de una serie de 762 pacientes operados por lesiones de la vejiga de hiel, y se supo que más operaciones ocurieron durante los meses de mayo, junio, y julio que en ningún otro. En agosto, setiembre, y octubre ocurieron poco menos. Un porciento pequeño de todos fueron operados durante el invierno.

Noventa por ciento de los pacientes dieron historias de tratamiento a causa de ataques de dolor en la vejiga durante un período de desde dos hasta quince años. No se fiaba en resultado negativo de retratos X-ray para decisión dianóstica. La historia y el resultado de estudio clínico son las mejores indicaciones para la operación. Se daban transfusiones de sangre entera y fresca durante de y despues de la operación para diminuir el choque y mejorar la resistencia del paciente.

Para esos caso de duración de no más de pocos años se efectuaba colecistostomy. Para esos de duración más larga, se empleaba colecistectomía siempre. La preñez no debe considerarse como contraindicación para la operación.

Secciones de los muros de la vejiga no mostraron invasión micróbica, pero estudio de la líquida mostró varios tipos de microbios.

Se sacaron dos vejigas por el método electro-quirúrgico, sin secar. Los dos pacientes gozaron mejoramiento completo sin complicación ninguna.

RIASSUNTO

Chirurgia della cistifellea

Analisi di 762 pazienti operati per lesioni della cistifellea durante un periodo di 15 anni rivelarono che i mesi in cui tali operazioni erano prevalenti erano Maggio, Giugno e Luglio. Vicini erano Agosto, Settembre e Ottobre. Una percentuale minore di pazienti fu operata durante l'inverno.

90% riportarono una storia di trattamento medico per attacchi dolorosi nell'area della cistifellea durante un periodo da 2 a 15 anni.

Reperti radiografici negativi non venivano presi in considerazione per la diagnosi. La storia e i dati clinici si dimostrarono essere corretta guida per l'operazione. Transfusioni di sangue intero prima e dopo l'operazione furono spesso somministrate per diminuire lo shock ed elevare la resistenza del paziente.

Colecistostomia fu eseguita in quei casi, i cui sintomi erano esistiti solo per pochi anni. Quando la storia era di più lunga durata, colecistectomia veniva sempre eseguita. La gravidanza non è una controindicazione per operazioni sulla cistifellea. Sezioni delle pareti della cistifellea non dimostzarono chiara invasione microbica, mentre i liquidi rivelarono vari tipi di bacilli. Due cistifellee vennero rimosse con il metodo elettro-chirurgico e non furono drenate. Ambedue i pazienti si ristabilirono normalmente.

INTERNATIONAL ASSEMBLY

Associate Members, Members and Fellows desiring to present papers at the International Assembly of the International College of Surgeons to be held in Mexico City, Mexico, from August 10 to 14, 1941, will please communicate at once with Dr. Desiderio Román, 250 South 17th Street, Philadelphia, Pennsylvania, Chairman of the Program Committee for the United States.

Colposcopy, the Modern Approach to the Problem of Cancer of the Cervix

CURT STEFFEN, M.D.*

PEORIA, ILLINOIS

COLPOSCOPY, though a new gynecologic method, is yet an acknowledged branch of medical science in Europe. It has been brought to its present state of perfection by Hinselmann.

The colposcope, through the use of a binocular with a ten to thirty times magnification, along with proper illumination, permits diagnosis of the finest structural surface differences in the living, e.g., epithelial defects, changes of the epithelium and very small exophytic carcinomata. Findings with a visibility border near twenty micromillimeters were compiled by Hinselmann in many articles, in which the value of colposcopic pictures was compared with that of microscopic sections in regard to the genetic epithelium of the cervix carcinoma and the latent links of the carcinoma series. In spite of still-existing doubts, these studies have contributed notably to the physiology as well as to the normal and pathologic histology of the female genitalia.

Having acquired sufficient experience in practical colposcopy, one soon becomes acquainted with certain phases of the mucosa cervicis, e.g., the ectopia (about 10 per cent). Here the cylindrical epithelium does not end at the external border of the cervical canal, as would normally be the case, but grows over it. This condition is either congenital or the result of obstetrical trauma. By the use of 3 per cent acetic acid the boundary line between the original squamous epithelium of the portio and the cylindrical epithelium, the latter characterized by a grapelike structure, may be exactly differentiated and frequently recorded at unexpected places.

More important, and characterized by the presence of a special mucous membrane, is the so-called transformation zone (about 80 per cent). In place of the cylindrical epithelium, squamous epithelium appears here. The new mucous membrane may become so similar to the original mucosa of the portio that microscopically no difference can be ascertained between the two. The colposcope, if necessary with the aid of impregnating fluids such as 3 per cent acetic acid or 5 per cent silver nitrate, will establish the clinical diagnosis of this transformation zone with certainty. This zone, with its exceptional biologic and histologic location, is of particular importance because it is frequently the matrix region of the carcinomata (up to 10 per cent) (Hinselmann).

MATRIX REGIONS

Colposcopically, those matrix regions which may exist together present themselves in the following forms:

1. Leukoplakia.
2. *Base of a leukoplakia.*
3. Squaring (Felderung).
4. Iodine-negative regions, without differentiating fluids colposcopically not interpretative.

Histologically, the matrix regions are arranged in the following order:

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*Of the Peoria State Hospital; formerly of Hamburg, Germany

Matrix I. Atypical epithelium with horn formation (keratinization).

Matrix II. Advancement of this epithelium into the connective tissue (proliferation).

Matrix III. Atypical epithelium changes in layers and cell type, becoming more similar to carcinoma cells.

Matrix IV. (a) This epithelium, corresponding to the papillae, rises above the surface. (b) It enters the connective tissue with proliferating branches. (c) It proliferates into the glands.

At times it will doubtless be difficult to bring these macroscopic findings into conformity. Biopsy, however, has shown:

1. That matrices I and IV may be concealed underneath the horny masses of the leukoplakia.
2. That we may determine, from looking at the base and the iodine-negative region, the matrices I and IV, from squaring the matrices II, IVb or IVc.
3. That matrix IVa proves to be a specific colposcopic picture with visible keratinized or nonkeratinized papillae.

ORIGIN OF CERVIX CARCINOMA

The developmental series of the atypical epithelium is now, after long observation, being talked of by Hinselmann as the obligatory transitional state of the cervix carcinoma. (See Fig. 1.) This thesis seems justified, inasmuch as a suddenly originating portio carcinoma developing from the ideal mucous membrane by skipping the intermediate stages or other mucous membrane changes (except those outlined under "Matrix Regions") has been neither seen nor named. It is obvious per exclusionem that the carcinoma develops from its mucous membrane site, that the mucous membrane changes, which consist of the same cell material, function as mother soil. As long as we explain the carcinoma as proliferating from the locally existing epithelium, and furthermore accept Fisher's theory that "a phase of proliferation precedes every cancer," a developmental process other than the one above outlined is quite incomprehensible. Similar conceptions as to the zone of demarcation or the tendency of interstitial changes of long standing to acquire malignant properties have been expressed by Waldeyer, Bonney, Sheatle, Ribbert, Wolbach, Strachan, Kermauner, Schottlaender.

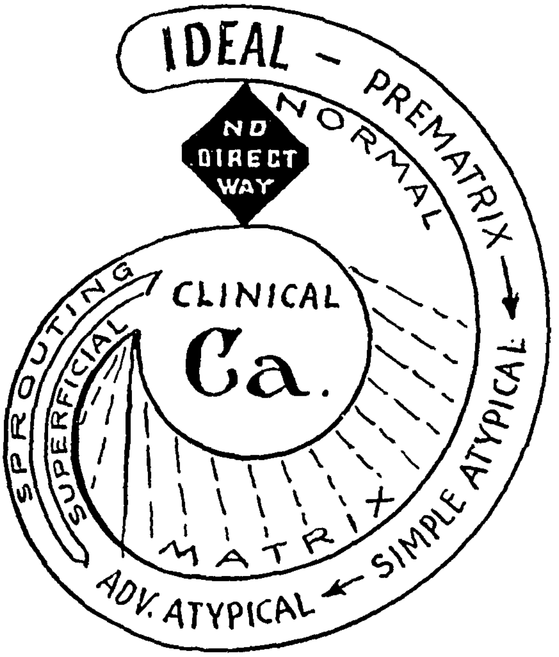

Fig. 1. Development of clinical carcinoma.

On the other hand, it is Schiller's idea that the cervix carcinoma originates suddenly as an autochthon process without passing through stages of benign hyperplasia. According to him, the cervix carcinoma can originate from the normal skin—however, seemingly in such a way that the skin very nearly keratinizes in advance.

Final determination of this question must wait until further research on carcinoma histogenesis makes recognition of the malignancy possible. On the basis of existing clinical observations, it seems that the abnormal mucosa as well as the transitional stages (Fig. 2) may remain stationary for many years (10-15); a retrogression, how-

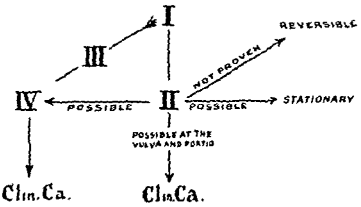

Fig. 2. Transitional stages of clinical carcinoma.

ever, of the medium and larger regions has hitherto not been observed (Fig. 2).

Contrary to this established fact, pathologists such as Bergmann, Borst and Eisenreich frankly recognize state IV as a true carcinoma and state III as a suspicious one. Regarding states I and II and their obligatory development in the direction of a carcinoma, or the eventual ability of retrogression, they believe it impossible to make a definite statement.

COLPOSCOPIC DIAGNOSIS

As far as the pathologic-colposcopic diagnosis is concerned, leukoplakia (1), even if not completely [illegible] is the most interes[illegible]ble to observe directly in six instances the development of cervix leukoplakias into carcinoma.

One is prone to take for granted, by reason of analogous conclusions, that leukoplakia of the cervix has the same relation to cancer as leukoplakia of the vulva, mouth, lip, tongue, larynx, renal pelvis and bladder. It is well known that the latter have proved to be the forerunners of the malignancy in many cases.

Through the use of the colposcope the gynecologist is enabled to detect the cervix leukoplakias in greater numbers. According to Schiller, the optical group of clinical leukoplakias does not coincide with pathologic leukoplakia; he differentiates between the carcinoma-leukoplakia and atypical hyperkeratosis leukoplakia, which has no tendency to resolve into a carcinoma. The differentiation, whether one has to deal with the first group or with purely superficial coverings in a special clinical case, could be made only histologically (Schiller). Whether one speaks of the now not so rare "patches of enamel paint" (Bloodgood) as hyperkeratoses, or as basic or conditional starting points, or as basis of an epithelioma; whether one sees in them the primary stage and in the carcinoma the secondary stage, or only an accompanying phenomenon of the carcinomatous process (Hinselmann), they should be a signal of alarm in any event. We know from colposcopic experience that the leukoplakias can remain stationary up to five years; and that upon removal of the horny layers of an intact leukoplakia, all matrix stages may sometimes be viewed in the tissue depth.

The "base" of leukoplakias (2) differs distinctly from the leukoplakia itself and has a particular significance; like the erosia vera, it requires control over a long period of time.

Like the "base," the so-called "squaring" (3) was likewise unrecognized. Another view of the atypical epithelium which had escaped detection with the naked eye became another colposcopic phenomenon. This picture, arising from the epithelium cones which penetrate at intervals from the surface into the depths, is numerically more frequent than leukoplakia plus "base" (about 1½ per cent of all cases), and is often observed in contrast to hitherto described changes in nulliparae.

The last colposcopic picture (4) is characterized by these facts:

a. *Macroscopically*, this region can be made visible only with the aid of differentiating fluids, such as diluted Lugol's solution. This region, like regions 1-3, remains iodine negative.

b. *Microscopically*, the [illegible]s of "base" and "squaring"

AUTHOR'S DIAGNOSTIC RESULTS

The practical diagnostic results obtained by the author were as follows:

Matrix regions were found in 450 cases (5 per cent of 9,000 cases colposcoped). Identification was possible in all except 270 cases (3 per cent). Biopsy of the latter revealed 63 cases (23.3 per cent) of advanced atypical epithelium of matrix IV. The proportionally low number of microscopic examinations may be explained by the method per se, as well as by the opportunity of follow-up observations of abnormal findings in the danger zone. Therefore, the efficiency of the colposcope as to beginning carcinoma is not only seen in an amplified diagnosis of ulcers and tumors of the smallest size (compare the smallest carcinoma with a volume of 1.5 cm: Hinselmann), but also clarifies the diagnosis of the mother soil with or without carcinomatous changes. The colposcope increases the possibility of recognition to such an extent that even the elementary component of the endophytic carcinomata per se has been diagnosed in certain cases, as well as the uni- or pluripapillary exophytic carcinomata.

By the use of the iodine test alone, I found iodine-negative areas in 22 per cent of the cases; however, these interpretations could only be made possible by microscopic examination. In comparison with the iodine test, the colposcope therefore shows its greater usefulness. The colposcope also makes it possible to examine critically the lower third of the always iodine-negative cervical canal, as well as to study scientifically the aspect of the original epithelium of the carcinomata, if necessary, with the aid of even stronger magnifications.

Furthermore, this method aids in the diagnosis of many gynecologic conditions which, due to smallness, are not discovered in the usual examinations. Among these are: condylomata, leukoplakia, tuberculomas, cervical ulcers, cervicitis, polyps, submucous fibromyomata, vaginal and labial ulcers, anal fissures, hymenal tears and even early pregnancies. Concerning inflammatory areas showing semidetached or denuded epithelium, they can be only partially recognized by impregnation with silver nitrate solution.

FUTURE OF COLPOSCOPY

The cervix, being easily visible and frequently harboring lesions which are due to long-continued irritations and chronic infections, and being covered by columnar epithelium in contradistinction to the squamous epithelium of the vaginal aspect, is a favorable object for direct colposcopic inspection; also, owing to its accessibility, for biopsy studies. The cervix is therefore a particularly ideal subject for carcinoma studies on the living.

We welcome the fact that recently universities on the Continent have favored the establishment of professorships for colposcopy, and outstanding clinicians in the United States (E. Ries, Martzloff, Davis, Douglas, Crossen, Schiller) have advocated this method of examining gynecologic patients. If the diagnosis of the smaller cancers and the latent cancers covered by mucosa, or the interpretation of the intermediate stages, depends on the efficiency of the naked eyes, then the colposcopic inspection must logically benefit us and also our patients. Figures 3, 4 and 5 may explain the changed conditions.

By means of color photography, which has replaced the black and white picture and the inconvenient, expensive water color, we are enabled to make use of colposcopic findings for teaching and scientific purposes as well as for the control of cases under observation.

The binocular colposcope seems to be technically the most perfect instrument for the recognition of the danger zone in the living. Besides facilitating diagnosis of the matured carcinoma, which has passed through transitional stages until clinical symptoms are apparent, the uncovering of

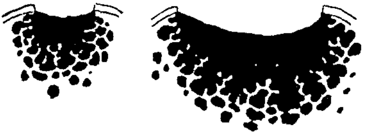

Fig. 3. The usual large manifest carcinoma, the diagnosis of which has never been difficult.

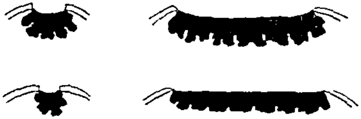

Fig. 4. Young ulcerated carcinoma. The diagnosis, although difficult, is made easier by means of the colposcope. The biopsy is less often necessary.

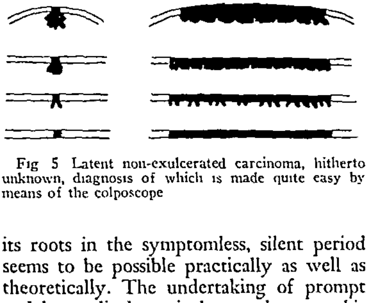

Fig 5 Latent non-exulcerated carcinoma, hitherto unknown, diagnosis of which is made quite easy by means of the colposcope

its roots in the symptomless, silent period seems to be possible practically as well as theoretically. The undertaking of prompt and less radical surgical procedures at this ideal therapeutic stage would be the best means of increasing the number of cures in cervix carcinomata, cures having remained relatively low despite the great improvement in treatment methods.

As to the general introduction of the colposcopic method, the main field of usefulness would be limited to clinics, owing to the necessity of long and constant instruction in this special branch, and to the fact that there is a lack of training centers. Furthermore, training in pathology is advisable because of the multiplicity of the pictures, the interpretation of which presupposes personal experience, ability to translate the colposcopic findings into microscopic pictures and ability of the operator to examine the sections himself. The dangers of therapeutic polypragmasia make the colposcope of little value in the hands of an untrained operator.

Schiller's iodine test represents a useful method for the general practitioner, insofar as this method, systematically employed, will not only make it necessary for him to explore routinely the portio with the speculum, but will reveal to him whether or not it is iodine positive. This simple method, in the majority of cases, shows the intactness of the portio by the positive iodine reaction. Before carrying out a biopsy or other surgical procedure, it would be to the practitioner's benefit to refer seemingly abnormal cases to the expert colposcopist. Preventive cooperation between practitioner and gynecologist, relinquishing the obsolete point of view that clinical symptoms are equivalent to early cancer stages (as promulgated in the anti-cancer campaign), appears to be the most useful application of the diagnostic factors at our disposal, guaranteeing early treatment and thereby lowering the cervix cancer mortality.

SUMMARY

A wider use of colposcopy, the author believes, would greatly increase the percentage of cures in carcinoma of the cervix by aiding early diagnosis. It also permits observation of those changes at the portio which have not yet produced symptoms. The use of the colposcope and the colposcopic picture of four matrix regions are described in detail.

RÉSUMÉ

Le moderne addresse dans le problème du cancer du cou utérin

L'auteur croît que un usage plus répandu de la colposcopie augmenterait beaucoup la

percentuelle des guairisons dans le cancer du cou de l'utérus, en aidant une précoce diagnos. Il permet l'observation des altérations de la portio utérine qui n'ont pas encore donné des symptômes. L'usage du colposcope et le portrait colposcopique des quattre régions matrices sont décrits en détail.

ZUSAMMENFASSUNG

Moderne Stellungsnahme zu dem Problem des Cervix Carcinom

Der Autor ist der Ansicht, dass häufigere Anwendung der Colposcopie den Percentsatz der Heilung von Cervix Carcinom bedeutend heraufsetzen würde, indem es zu einer frühen Diagnose verhilft. Es gestattete ferner eine Beobachtung jener Veränderungen der Portio, welche noch nicht Symptome hervorgerufen haben. Die Anwendung des Colposcops und die Beurteilung der colposcopischen Bilder der vier Matrix Regionen werden genau beschrieben.

SUMARIO

El moderno acercamiento a el problema del cáncer del cérvix

El autor cree que un amplio uso de la colposcopía ayudaría a un diagnóstico temprano y por lo tanto a un aumento en el porcentaje de curaciones en el carcinoma del cérvix. Tambien señala aquellos cambios de la porción que aún no producen síntomas. El uso del colpóscopo y la colposcopía de las cuatro regiones de la matriz son descritas en detalle.

RIASSUNTO

L'indirizzo moderno nel problema del cancro del collo uterino

L'A.crede che un uso più vasto della colposcopia aumenterebbe molto la percentuale delle guarigioni nel cancro del collo uterino, aiutando una diagnosi precoce. Anche permette l'osservazione di quelle alterazioni della portio uterina che non hanno ancora data sintomi. L'uso del colposcopio e il quadro colposcopico delle quattro regioni matrici sono descritti dettagliatamente.

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The History of Hernia

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LOS ANGELES, CALIFORNIA

THE etymologic derivation of the the word hernia is probably from the Greek *erons*, meaning a branch or offshoot, which simply denotes the hernial projection. The ancients used the Latin word *kele* (a swelling), combining it with a word which designated the contents of the swelling: *enterocele* for intestinal hernia; *epiplocele* for omental hernia; *omphalocele* for umbilical hernia; *cystocele* for bladder hernia; while the word *bubonocele* indicated the point of protrusion. The older writers called enterocele, *ramex intestinalis;* and epiplocele, *hernia zirbalis.* The oldest printed Latin editions of the Bible use the word *berniosus,* and Chaucer, in the fourteenth century, used *hirnia.* The Greek words used to designate the varieties of hernia, strangulation, etc., are discussed at length by Albert.

We are, most of us, busy practitioners, and I often wonder whether we are mindful of what has been accomplished by our predecessors, and of the historical mileposts established by those who have labored so diligently and accomplished so much under difficulties of which we have no conception.

Hernia is undoubtedly as old as the history of man, and while no records are extant, it was probably treated by primitive man with the simple measures at hand, guided by his instinct. As civilized knowledge increased, reducible hernia was retained by a bandage or girdle, and strangulated hernia was treated by such palliative measures as a light diet, rest, purgation, and the application of cool water, which was known to be more efficacious than warm water. Massage was known, and taxis was employed, seldom gently. Reduction was often aided by partially inverting the patient—our modern Trendelenburg position. Operation was never done for strangulated hernia, as its causation was not understood.

EARLY HISTORY OF MEDICINE AND SURGERY

Even in the early history of medicine we find that astringent plasters were applied, bleeding was practiced, and wounds were sutured or bandaged to hasten healing. As regards surgery, trephining of the skull was performed as long ago as the early Stone Age. In primitive historic times surgical knives were made of flint; these were also used up to historic times by the Egyptians and the Jews. Surgery was veiled in mysticism and sorcery. If a patient lived, the good spirit had triumphed; if he died, the evil demon was the stronger.

The earliest historic records of surgery begin with the Sumerians in Mesopotamia (about 4000 B.C.). They were conquered in turn by the Semites, Babylonians and Assyrians, with the result that each added something, real or fanciful, to the development of medicine. Diseases were classified according to symptoms. The blood was believed to be the foundation of life; the arterial blood was called "day blood" and the venous blood was called "night blood."

Colic and abdominal pain were ascribed to phlegm, bile and wind. Herbs, honey and date syrup mixed with milk and water were used internally, also externally as salves. Cupping, oil rubbing, hot baths and cold applications were employed. However, any treatment was supposed to be ineffective unless combined with mystic incantations and the application of various amulets and charms to help drive out the evil spirit. Medicine and surgery were controlled by the temple priests, who were the only practitioners.

The Babylonians were well versed in astronomy, consequently the various anatomical regions were placed under the control of the signs of the zodiac, and prognosis was made from astrology. The number 7 was considered unlucky, and patients were not treated on any day that could be divided by 7.

The earliest records of physicians' fees and the regulation of the practice of surgery are found in the Code of Hammurabi (2200 B.C.), in which it is stated: "If a physician cause a severe operating wound with a bronze operating knife and cure the patient, or if he open a tumor and save his eye, he shall have ten shekels of silver." However, if the patient died, the physician had his hands cut off. It might be mentioned that the bronze knives of this ancient period would take an edge equal to the best steel.

When a person was ill, the custom of the Babylonians was to lay him in the public square where the passers-by could talk to him. If they had ever had his disease or knew of anyone who had suffered from it, they were to give him advice as to what to do. No one was allowed to pass the sick man without asking him about his ailment (Herodotus).

The medical and surgical history of ancient Egypt goes back to the time of the pyramids, about 3000 B.C. As Neuburger remarks: "Thanks to the labors of the past century, thanks to the desert sand and the almost rainless climate of Egypt, which greatly assist to preserve the hoary remains of a past civilization, we are far better able to review its development than in the case of less remote Greece and Rome." The art of medicine and surgery in Egypt reached its zenith about 2000 B.C. The Egyptians made improvements in the surgery of the Babylonians. They used bronze operating knives, forceps, hooks, and needles; they tied true reef knots, opened abscesses and packed the cavities with lint, linen or cotton. They improved the bandage treatment of hernia and discovered enemas. The Egyptians excelled all the races of antiquity in hygiene.

The priests were the only physicians, and medicine was taught in the temple schools. Toward the period of decline, specialism appeared. There were those who treated abdominal diseases, and others who treated affections of the head and teeth. Before extracting decayed teeth, they filled them with lead so they would not break.

The Egyptians believed that strangulation of hernia was due to an accumulation of hardened feces. This was also the belief of the Jews, and is referred to in the Old Testament. This opinion was held later by Celsus and by most surgeons after him; indeed, it was not until the seventeenth century that Lavater finally dispelled it in his book, *De Enteroperistole.*

Most of our knowledge of the medicine and surgery of ancient Egypt is derived from the Ebers and Brugsch papyri, which were written between the sixteenth and fourteenth centuries B.C. At the time of the arrival of the first Greek travelers in 700 B.C., Egyptian medicine and surgery had begun its decline. Dissection was allowed at Alexandria under the Ptolemies, but after the Roman invasion it was abandoned because the Romans believed that contact with a corpse was profanation. In 320 B.C. the Alexandrian Library was founded by Alexander the Great. This was destined to be the principal medical center for one thousand years, and contained 500,000 volumes when it was burned the first time. Mark Antony restored it at the behest of Cleopatra, moving the library from Pergamos. It then remained undisturbed until finally destroyed in 640 A.D.

The Greeks, ancient patrons of the arts and sciences, contributed to the improvement of surgery and excelled in diagnosis. Apollo and his son Aesculapius were celebrated as surgeons and were reckoned among the gods. Podalirius and Machaon, sons of Aesculapius, as well as Chiron the Centaur, were also noted surgeons of ancient Greece, but unfortunately the monuments and writings of those ages were entirely effaced by the ravages of the elements and time. Hippocrates, who was a descendant of Aesculapius and lived in the fourth century B.C., excelled all others in the study of medicine and surgery. He collected the available knowledge of the time on disease and its treatment, and added his own valuable commentaries. In his writings, as well as in the fragments left by his contemporaries, Praxagoras of Cos and Coelius Aurelianus, there are references to hernia. Praxagoras is credited with practicing taxis for strangulated hernia.

The progress of the Greek surgeons stimulated the interest of the Egyptians and Romans. Later, in Greece, Philoxenus, Gorgonus, Sostratus, Herones, the two Appollonii and Ammonius Alexandrinus; and in Rome, Tryphon, Euelpistus and Meges were famous surgeons, but their works are all lost. We know of them only through the writings of Celsus. The Romans never equaled the Greeks in medicine or surgery. To Asclepiades, who lived in the second century B.C., is mainly due the credit of bringing Greek medicine to Rome.

EARLY TREATMENT OF HERNIA

Our knowledge of the surgery of the ancients comes especially from the writings of the famous Roman, Celsus, who lived in the first century A.D. He operated extensively on umbilical hernias, and less frequently on the inguinal variety. He described the translucency of hydroceles, used ligatures for hemorrhages, sutured wounds of the intestines, and advised the inclusion of the peritoneum in closing the abdomen. For inoperable nonstrangulated hernias he used the ancient *emplastrum contra rupturam* and kept the patient in bed for forty days. His directions for bandaging umbilical hernia in children differ only slightly from the present-day methods. He described and practiced both ligation and excision of hernial sacs, with suture of the opening. He applied compression, accompanied sometimes by astringents.

Aretaeus, a Greek physician of the first century, wrote on hernia, his methods of treatment being similar to those of Celsus. Soranus of Ephesus, who lived in the first and second centuries A.D., was the most famous obstetrician and gynecologist of antiquity, and was the first to describe hernia of the ovary and tube.

In passing, it is interesting to note that another Roman of this time, Vitruvius Pollo, described the symptoms of lead poisoning from lead aqueduct pipes, and also wrote that goiter was due to the water in certain localities.

Galen, the last of the famous Greek surgeons, lived in the second century A.D. He studied in Alexandria and afterward went to Rome. He was an ardent vivisectionist and studied anatomy in monkeys. Because the tunica vaginalis is open in these animals, he thought it was open in man, and on this account was led into the error of believing that hernia was due to a rupture of the peritoneum. He described nearly every bone in the body. Dissections were generally abandoned after the time of Galen, who represented the zenith of the surgery of antiquity, and by the third century surgery began to decline.

Galen's method of treating hernia was generally by ligating the sac at the superficial ring or below it. His belief that hernia was due to a peritoneal rupture was held by many, well into the Christian era; however, it was the opinion of Paulus Aegineta and those who followed him that hernias of slow formation were due to stretching of the peritoneum, and that it was only in a sudden hernia that the peritoneum ruptured. Rhazes, Lanfranc, and Guy de Chauliac, who came later, apparently knew that in hernia there was no peritoneal rupture; but the point was not fully established until proved by Ruysch's dissections at the end of the seventeenth century.

Oribasius, a famous Greek physician of the fourth century, studied in Alexandria, later becoming physician to the Emperor Julian. His encyclopedia of medicine and surgery is one of the most complete that has survived. Aëtius, a Greek physician of the fifth century, wrote on surgery, but as is true of others of this decadent period, his books were only a compilation of the works of the earlier Greek writers. He treated hernia by compression and astringents.

Paulus Aegineta, a Greek physician and surgeon who practiced in Alexandria during the first half of the seventh century, the time of the Arabic invasion, represents the last of the long line of famous physicians and surgeons of this school of learning, which existed for nearly 1,000 years. Paulus wrote at length on surgery, and his writings on hernia are quite extensive. He dwelt on the symptoms of hernia and indications for treatment, especially by the use of the ligature. He operated for nonstrangulated hernia, according to the method of Celsus, often using the transverse abdominal incision.

During the tumultuous times of the fifth century, when the ominous clouds of the Dark Ages cast their pall over all Europe, and proud Rome, suffering the common calamity, fell before the northern barbarians, medicine and surgery, which had been under the influence of Greek culture, were compelled to seek refuge in the monasteries, and the priests again, as in the ancient times, became the physicians, a condition that continued until the sixteenth century, when medicine was finally separated from the church.

ARABIAN PERIOD

About A.D. 500 the Persians gave asylum to Greek knowledge, and in turn passed it on to the conquering Arabs. The Arabic period began with the second destruction of the Alexandrian School in 640 under Omar, the successor of Mahomet.

After their first fanaticism had spent itself, the Arabs acquired a thirst for knowledge from their contact with civilization, and became ardent patrons of the arts and sciences. They translated nearly all the extant medical literature of Greece into Arabic. Indeed it is to these translations that we have had to turn for some of the missing books of Hippocrates, as well as other ancient works. Among the famous Arabian surgeons may be mentioned Rhazes (850-932), who described the suturing of wounds with the strings of a harp (catgut); Haly Abbas (994), who operated extensively for hernia; Avicenna (980-1037), who described the differential diagnosis of enterocele and omentocele by ausculation; and Albucasis (1122), who closely followed the methods of Celsus. Terapion, Avicenna and Albucasis treated hernia by cauterization after exposing the sac by incision.

THE MIDDLE AGES

The Arabian decline came in the West with the fall of Cordova (1236) before the attack of Ferdinand III of Castile, and in the East with the Mongol invasion and fall of Bagdad (1258). With the decadence of Arabian medicine in the eleventh century the leadership passed to the tireless progressive races of Europe. During the twelfth and thirteenth centuries governments became more stable. The dark clouds that had overshadowed all the sciences and kept medical and surgical knowledge at a standstill for nearly a thousand years gradually began to clear. Schools were established in different countries, and medical teaching was actively revived. The school of Salerno was most famous, and the school of Montpellier was next in importance. These institutions reached the height of their influence and power during the twelfth and thirteenth centuries. Other schools sprang up in many cities, notably in Bologna, Padua, Paris, Naples, Toulouse, Valencia and Oxford.

The most notable hernia surgeons of this time were Roger of Salerno (1210), Roland (1250), William of Salicet (1230), Theodoric in Bologna, Lanfranc (1315) in Paris and Guy de Chauliac of Montpellier.

During the twelfth and thirteenth centuries medical science and religion were closely associated. In Italy and France nearly all the surgeons were clerics. Surgery was not recognized as a distinct art by the universities until later, and surgical operations generally were delegated to barbers or hernialists. In this transitional age there were all varieties of charlatans—hernialists, cutters for stone, bleeders and operators for cataract among others.

Near the end of the transitional age, in the fourteenth century, lived the master surgeon Guy de Chauliac. He studied in Montpellier, Paris and Bologna. His great work on surgery was published in 1363. Unlike most surgeons of those days he was not satisfied to turn his patients over to barbers and hernialists, but did the operating himself. He was a student of anatomy and was the first to distinguish umbilical from inguinal and femoral hernias. Among the medieval surgeons Guy de Chauliac alone appears to have been aware that hernia may occur in the thigh; after his writings this fact is not mentioned again until Nicholas LeQuin mentioned it in 1665. Guy de Chauliac refers to it in his *Chirurgia Magna,* and in the same work differentiates ventral from umbilical hernia, with which it was previously confused. He revised Celsus' method of laying the hernial sac bare and ligating it. His practice was excision of the sac with suture, as was also advocated by Bertrandi, Lanfranc and others.

THE RENAISSANCE

The Renaissance (fourteenth to sixteenth centuries), the period of transition between medieval and modern times, was marked by phenomenal progress in all arts and sciences. In the sixteenth century decided progress was made in surgery, owing to the gradual lifting of the ban on dissection, and to the separation of medicine from the priesthood, which was completed in this century. Among the notable events in the history of hernia are: Pol reported the first case of hernia of the uterus; Fallopius described the Fallopian tube; Vesalius described the appendix and Vidus Didius named it; Plater reported the first case of bladder hernia; Paré described diaphragmatic hernia; Fabricius Hildanus wrote on partial enterocele; and Roussetus described the operation for strangulated hernia, which was later improved and popularized by Pierre Franco. To this period also belongs the "royal stitch" practiced by Fabricius ab Aquapendente and the *puntum aureum* of Ambroise Paré. These were methods of snaring the hernial sac with wire and separating it from the cord (inguinal hernia) so as to ligate the sac alone. Up to this time there had been no change in the treatment of strangulated hernia for almost twenty centuries—since the time of Hippocrates—its nature not being understood until the publication of Lavater's work.

SEVENTEENTH AND EIGHTEENTH CENTURIES

The seventeenth century saw an increased interest in anatomy and surgery. Sennertus reported the second case of hernia of the pregnant uterus; Sala, the second case of bladder hernia; Lavater recorded a case of hernia of the ovary and tube and described the mechanism of partial enterocele; Ruysch suggested the possibility of hernia of Meckel's diverticulum; and Barbette, Verheyen, Lowe and Scultetus wrote on the different varieties of hernia. Dionis advised dividing the external ring in strangulated hernia. Although operation for strangulation was general at this time, the theories of the ancients as to the cause of strangulation were still prevalent. Lavater's book appeared in 1691. The nonoperative treatment in vogue at this time in Denmark and in some other countries was to keep the patient in bed for a period of six to twelve months. Many cures were reported following this procedure.

With the eighteenth century came an awakening in the field of anatomy and surgery, and a final breaking away from the beliefs and practices of the ancients. Littré and Méry observed cases of hernia of Meckel's diverticulum; the difficulties of diagnosis in diaphragmatic hernia were pointed out by Stehilinus; the duodenal fossae were described by Hensing, Haller and Bordenave; de Garengeot described hernia of the appendix and hernia through the linea alba; and Gunz, Divoux, Arnaud, and Verdier made extensive studies of bladder hernia. Petit said of large hernias that had long been irreducible, that they "had lost their right of domicile." Gimbernat described the ligament that bears his name, and originated a new and safer operation for strangulated hernia. Mauchart wrote on the anatomy of femoral hernia.

Papen and Smellie observed perineal hernia in women, Le Dran wrote on hernia in the linea semilunaris, partial enterocele and femoral reduction en masse, La Chausse described ventral hernia, and De Gouey reported the second case of hernia of the Fallopian tube alone. Haller and Verdier reported cases of sciatic hernia of the bladder Arnaud, Pott, Sharp, Monro, Richter and Camper wrote important treatises on hernia.

The ancients attempted to suture the divided ends of the intestine in certain cases of gangrene or accidental rupture; Celsus observed that the best results followed stitching of the large intestine. As early as the thirteenth century, devices were used to unite the ends of the intestine. The Four Masters employed the trachea of an animal, cut to the proper length, inserted it into each end of the divided intestine and joined the ends of the intestines with sutures. Roger of Salerno and Theodoric used a cannula of elder; Watson one of fish glue; Scarpa made one from tallow; and Desault and Chopart used a varnished playing card. Randhor invaginated the upper end of the intestine into the lower end, united it with sutures and returned the intestine to the abdominal cavity; the patient survived. Bichat in the last of the eighteenth century pointed out that mucous and serous surfaces do not unite; and Lembert in 1825 described his method of suturing serous surfaces in contact.

At the beginning of the nineteenth century appeared the classic monographs of Cooper and Scarpa, heralding the dawn of the modern era in the surgical treatment of hernia.

SUMMARY

The history of hernia is traced from 2000 B.C. to the nineteenth century. The Egyptians and Jews believed that strangulated hernia was caused by an accumulation of hardened feces. Galen believed that hernia was caused by rupture of the peritoneum. Ruysch at the end of the seventeenth century disproved Galen's theory by dissection. Lavater's book, published in 1691, helped to dispel belief in Galen's theory. Treatment remained virtually the same for twenty centuries following Hippocrates. The modern era in the surgery of hernia began in the nineteenth century, with the monographs of Cooper and Scarpa.

RÉSUMÉ

L'histoire de la hernie

L'auteur retrace l'histoire de la hernie depuis deux mille ans avant Jésus Christ jusqu'à nos jours. Les Egyptiens et les Israelites croyaient que l'etranglement de la hernie etait dû à une accumulation de matieres fécales durcies. Galen croyait que la hernie était due à une rupture du péritoine. Ruysch démontra la fausseté de cette vue. Le livre de Lavater, publie en 1691, démontra aussi l'erreur de la théorie de Galen. Pendant vingt siecles on ne fit peu ou aucun progrès dans nos connaissances du sujet. L'ere moderne date du commencement du dix-neuvième siècle.

ZUSAMMENFASSUNG

Die Geschichte der Hernie

Die Geschichte der Hernie wurde vom Jahre 2000 v.Ch. bis ins neunzehnte Jahrhundert erforscht. Die Aegypter und Juden glaubten dass eine strangulierte Hernie durch Eindickung von Kotmassen hervorgerufen werde. Galen hielt einen Peritonalriss fuer die Ursache von Hernien. Ruysch widerlegte Galens Theorie durch Sezierung am Ende des siebzehnten Jahrhunderts. Lavaters Buch (geschrieben 1691) half Galen's Theorie zu widerlegen. Die Behandlung blieb grundsaetzlich gleich bis 20 Jahrhunderte nach Hippocrates. Die moderne Äera in der Chirurgie der Hernie begann im neunzehnten Jahrhundert.

SUMARIO

La historia de la hernia

La historia de la hernia es investigada desde 2000 años A.C. hasta el Siglo XIX. Los Egipcios y Judíos creían que la hernia estrangulada era producida por una acumulación de materias fecales endurecidas. Galeno creía que la hernia era producida por la rotura del peritoneo. Al final del Siglo XVII Ruysch desaprobó la teoría de Galeno por disección. El libro de Lavater, publicado en 1691, ayudó a eliminar la creencia de la teoría de Galeno. El tratamiento fué virtualmente el mismo por veinte siglos despues de Hippocrates. La era moderna de la cirugía de la hernia empezó en el siglo diez y neuve.

RIASSUNTO

La storia dell'ernia

La storia dell-ernia è seguita da 2000 B.C. fino al secolo diciannovesimo. Gli Egiziani e gli Ebrei credevano che l'ernia strangolata era causata da un'accumulazione di fecce indurite. Galen credeva che l'ernia era causata da una rottura del peritoneo. Ruysch, al fine del secolo diciasettesimo, disapprovò la teoria di Galen per dissezione. Il libro di Lavater, publicato nel 1691, aiutò a fare dissipare la credenza nella teoria di Galen. La cura rimase praticamente la stessa per 20 secoli seguente, Hippocrate. Là epoca moderna nella Chirurgia dell'ernia incominciò nel secolo diciannovesimo.

A Case of Left-Sided Appendicitis, with Citations from the Literature

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EL PASO, TEXAS

IT appears that left-sided appendicitis is of rather rare incidence. Therefore I deem it of sufficient interest to add another case history to the literature.

The shape and structural anatomy of the appendix and the ileocecal segment of the intestines vary much less than do their topographic relations to the adjoining organs and the peritoneum. Among the abnormal locations of the appendix that in the left lower quadrant of the abdomen is one of the least frequent, but it is not the least important, as it offers great diagnostic difficulties.

The genetic factors responsible for a left-sided appendix may be classified as follows:

I. Congenital
  1. Situs viscerum inversus totalis
  2. Situs viscerum inversus partialis
  3. Excessive length of the vermiform process
  4. Mesenterium commune

II. Acquired
  1. Non-specific inflammatory processes
  2. Specific inflammatory processes, such as tuberculosis
  3. Tumors

In a complete transposition of the visceral organs all those usually located on the left side are found on the right, and vice versa. St. Clair in 1915 stated that approximately 300 cases of complete transposition of abdominal viscera had been reported in the literature to that date. This number probably includes the 214 cases already collected by Sorge (1906). Six of these had been observed at the Mayo Clinic; in three, operation had been performed for left-sided appendicitis. St. Clair appends no references to his article.

A solitary transposition of the cecum and appendix is less frequent. In early stages of the fetal development the so-called umbilical loop, which corresponds to the portion of the intestines extending from the duodenojejunal flexure to the splenic flexure of the colon, lies in a sagittal plane. The "anlage" of the cecum develops in the caudal portion of the umbilical loop. The proximal branch of this loop grows more rapidly than does the distal, and a rotation takes place, bringing the cecum from the left to the right iliac fossa. Failure of migration or an arrest of this move-point may determine an abnormal position of the appendix.

It is evident that if the vermiform process is abnormally long (it sometimes reaches 30 cm.) a part of it may be found on the left side of the body.

In the presence of a congenital anomaly called "common mesentery" the entire small intestines are located on the right side and the large intestines on the left.

As to the acquired causes, an inflammatory process of a specific or non-specific origin may produce adhesions which pull the appendix to the left, especially if a so-called mobile cecum is present. Tumors located in the abdominal cavity [illegible] sionally push the appendix to th[illegible]

LITERATURE

De Pol (1933) tabulated [illegible] sided appendicitis from the l[illegible] found that in 34 a total, and [illegible] transposition of the viscera [illegible] 2 cases a common mesente[illegible] abnormally long appendix [illegible] 6, and a displacement of the [illegible] inflammatory process in [illegible]

Pellegrini (1934) cites La[illegible] left-sided appendicitis in [illegible] surgical and autoptic m[illegible] encountered this abnormal[illegible] out of 1,600 and Cazzamali [illegible] once among 2,000 operations [illegible]citis.

In recent years cases of left-sided appendicitis have been reported by De Pol, Pellegrini, Minnie, Pol, Votta and Robertson, Taborisskey, Schwarz, Sugg, Block and Michael, Krook, Coester, Grettve and Moberg. Left-sided appendicitis in a patient with a mesenterium commune has been reported by Gruescu, Constantinescu and Galisciuc. Laurent, who reported Chaureau's case, stated that he observed a case in which the cecum was located in the right iliac fossa but in which the appendix extended way to the left side. A cecocolonic transposition, with the appendix located on the left side, has been described by Scopinaro. Montemartini found a portion of the mobile cecum and an inflamed appendix in a left inguinal hernia.

It seems that in left-sided appendicitis the pain is localized at McBurney's point, unless the peritoneum be affected, because the innervation may not be disturbed in spite of the transposition of the viscera. Therefore, unless a situs inversus has been previously recognized, the right lower quadrant is almost always exposed first and a second incision made on the left side. As a rule, the double incision is productive of no [illegible] in chronic or non-perforated appendicitis [illegible] case. It is obvious that it is highly [illegible] where a suppuration is present. [illegible] pain is localized in the left lower [illegible] differential diagnosis should [illegible] pregnancy, rupture of a [illegible]cle, torsion of an ovarian cyst, [illegible]rticulitis, renal calculi, etc. In [illegible] the most astute observer is [illegible] astray. In the majority of cases [illegible] the literature the diagnosis has [illegible] not preoperatively but in the [illegible] the surgical procedure.

[illegible] his thesis (1906) states that Ve[illegible] ([illegible]) was the first to show an [illegible] picture of a case of visceral trans[illegible]

According to Jacobson, it appears that [illegible] (1911) was the first to report an operation deliberately planned for left-sided appendicitis in a patient with a total inversion of the viscera. Hollenbach (1912) reported the second and Jacobson himself the third case.

It is fair to assume that with the increasing frequency of roentgenologic examination of the chest and the digestive tract a [illegible] of situs inversus will be made [illegible] more frequently. If the condition has been recognized, the patient should be informed as to the presence of the abnormal situation of his internal organs so that in the event of an acute abdominal condition he may aid the physician in arriving at a proper diagnosis.

Nather and Ochsner (1924) saw 9 cases, of which 4 were in children under 12 years. Royster (1927) reports that at least two-thirds of the cases of left-sided abscess on his records were observed in patients under twelve. The age incidence in other cases reported varied from twelve to forty-two, which shows that age is of no significance.

CASE REPORT

T. L., white male, age 22, brakeman, was admitted with pains in the right lower quadrant of the abdomen,

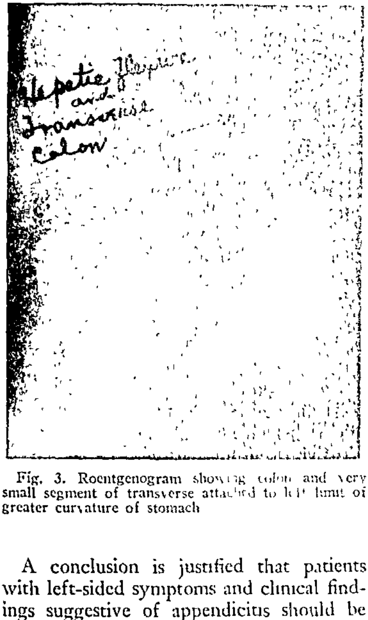

Fig. 3. Roentgenogram showing colon and very small segment of transverse attached to left limit of greater curvature of stomach

A conclusion is justified that patients with left-sided symptoms and clinical findings suggestive of appendicitis should be carefully examined for transposition of the viscera. Roentgenographic studies are of great importance for the diagnosis. However, where right-sided symptoms occur and the usual incision fails to suffice for discovery of the appendix, I believe that a midline incision above the navel is the best procedure. This incision will permit the certain location of the cecal junction. It can be extended vertically downward or laterally without prejudice, if needed, and will provide the adequate exposure that an ectopic appendix easily may demand.

SUMMARY

A left-sided appendix may be congenital or acquired. The congenital type may result from total or partial situs viscerum inversus, excessive length of the vermiform process or the anomaly, "common mesentery." The acquired type may be caused by inflammatory processes or tumors. The pain in left-sided appendicitis may be localized at McBurney's point because the innervation may not be disturbed. Patients with left-sided symptoms and clinical findings suggestive of appendicitis should be examined carefully for transposition of the viscera. Roentgenographic studies aid greatly in the diagnosis. In patients with right-sided symptoms, in whom the usual incision does not disclose the appendix, a midline incision above the navel should be made. The cecal junction can then be located and the incision extended, if necessary. A case of appendicitis in a patient with partial situs viscerum inversus is reported. Operation resulted in recovery.

BIBLIOGRAPHY

Block, F. B., and Michael, M. A.: Acute Appendicitis in Complete Transposition of Viscera: Case Report, Ann. Surg. 107: 511 (April), 1938

Chaureau, M. Roger: See Laurent, M. P.

Co [illegible] bei Sinistroposition des [illegible] ntan- und Druckschmerz [illegible] 22), 1938.

De [illegible] per "situs viscerum inver[illegible] destra, Gazz. d. osp 54: 1243 (Oct. 1) 1933.

C[illegible], Sten: Retroperitoneales Ileocaecum, eine bei der Operation beobachtete, eigentumliche Appendixlage, Acta chir. Scandinav. 81: 541, 1939.

Gruescu, F., Constantinescu, S., and Galisciuc, B.: Case of Mesenterium Commune with Appendicitis on Left Side, Rev. san. mil., Bucuresti 34: 567 (Nov.), 1935.

Hebblethwaite, Harold: Suppurative Appendicitis in a Patient with Transposed Viscera, Brit. M. J. 2: 1579 (Nov. 30), 1907

Hollenbach, Fritz: Ein Fall von Appendicitis bei Situs universus totalis, Deutsche med. Wchnschr. 1: 850 (May 2), 1912

Jacobsen, J. H.: Left sided Appendicitis in Situs Inversus Viscerum Totalis, Trans. Am. Assn. Obst. and Gyn. 30: 133, 1917

Krook, S. S.: Two Cases of Acute Abdomen in Patients with Situs Inversus, Svenska läk-tidning 35: 259-63 (Feb. 18), 1938

Reported by Chaureau, M. Roger, Laurent, M. P.: Appendicite a symptomatologie uniquement gauche malgré la précence en caecum dans la fosse iliaque droite, Bull. et mém. Soc. d. chirurg., Paris 25: 695 (Dec. 15), 1933.

Mason, J. Tate, and Baker, J. W.: Acute Appendicitis Associated with Transposition of Viscera, Surg. Clin. N. A. 13: 1439, 1933

Minnie, J.: Appendicite a gauche, L'Echo méd. du Nord 37: 385, 1933

Moberg, E.: Two Cases of Left-Sided Appendicitis with Total Transposition of Viscera, Nord. med. (Hygiea) 1: 58-59 (Jan. 7), 1939.

Montemartini, G.: Ernia inguinale sinistra strozzata contenente il cieco con appendice infiammata ed un' ansa del colon, Riforma medica 50: 679 (May 5), 1934.

Mühsam, R. von: Ein Fall von Appendicitis bei Situs inversus totalis, Deutsche med. Wchnschr. 1: 953, 1912.

Mühsam, R.: (Discussion) Zur klinischen Diagnose des Situs viscerum inversus totalis, Berl. klin. Wchnschr. 48: 1399 (July 24), 1911.

Nather, K., and Ochsner, A.: Der linksseitige Abszess bei Appendicitis, Deutsche Ztschr. f. Chir. 188: 114, 1924.

Pellegrini, A.: La diagnosi dell' appendicite acuta sinistra, Rassegna internaz. di clin. e terap. 15: 551-57 (May 15), 1934.

Pol, Z. V.: Left-Sided Appendicitis, Vestnik khir. 40: 134-41, 1935.

Pool, E. H.: Complete Transposition of Viscera in a Case of Diffuse Appendiceae Peritonitis, Ann. Surg. 56: 940, 1912.

Róyster, H. A.: Appendicitis—Left-Sided Abscess, Appleton and Co., 1927, p. 240.

St. Clair: Gangrerous Perforated Appendix Situated in the Left Iliac Fossa: Report of a Case, West. Med. Times 35: 322, 1915-16.

Schwarz, G.: Die Lagevarianten des Zokums und die Rontgendiagnose der abnorm lokalisierten Appendizitis, Roentgenpraxis 9: 836-39 (Dec.), 1937.

Scopinaro, A. J.: Transposición cecocolónica appendicitis izquierda, Rev. de cir. de Buenos Aires 11: 293-304 (May), 1932.

Sorge, Fritz G.: Kasuistischer Beitrag zur Kenntniss der Situs viscerum inversus, Berlin, 1906, 38 pp.

Sugg, W. D.: The Unusually Located Appendix, J. Florida M. A. 24: 219 (Oct.), 1937.

Taborisskey, M. G.: Case of Appendicitis on Left Side, Khirurgiga, 12: 149-50, 1937.

Votta, E. A., and Robertson, L. A.: Apéndice izquierdo en un caso de trasposición visceral. Situs viscerum inversus totalis. Heterotaxia, Semana med. 43: 356 (Jan. 30), 1936.

Willis, B. C.: Appendicitis and Transposition of the Viscera, Ann. Surg. 82: 256, 1925.

RÉSUMÉ

Un cas d'appendicite du côté gauche et revue la littérature du sujet

La position a gauche de l'appendice peut être congénitale ou acquise. Le type congénital résulte d'un situs viscerum inversus total ou partiel, ou d'une longueur anormale de l'appendice vermiforme, ou de l'anaomalie connue sous le nom "de mésentère commun." Le type acquis est du a des conditions inflammatoires ou néoplasiques. La douleur peut être référé au point McBurney car l'innervation peut être normale. Les malades prèsentant des symptômes d'appendicite du côté gauche doivent être examinés pour transposition des visceres. L'examen roentgenographique est utile. Dans les cas sentant des symptômes d'appendicite du côté droit dans lesquelles l'incision ordinaire ne donne pas accés a l'appendice, ou fera une incision médiane supra ombilicale. Il faut chercher la jonction coecal. Un cas est rapporté et décrit. L'operation fut suivie de guérison.

ZUSAMMENFASSUNG

Ein Fall von linksseitiger Blinddarmentzuendung mit Zitaten aus der Literatur

Ein linkseitiger Appendix kann angeboren oder erworben sein. Der angeborene Typ kann das Resultat eines kompletten oder partiellen situs viscerum inversus, eines ueberlangen appendix, oder der Abnormalitaet: Gemeinsames Mesenterium sein. Der erworbene Typ kann durch entzuendliche Veraenderungen oder tumoren hervorgerufen werden. Der Schmerz bei linksseitiger Appendicitis kann am McBurneyschen Punkt sein, da die Innervation nicht gestört sein muss. Patienten mit linksseitigen Symptomen mit Verdacht auf appendicitis sollen sorgfaeltig auf Transposition der Eingeweide untersucht werden. Roentgenuntersuchungen helfen die Diagnose zu stellen. In Patienten mit rechtsseitigen Symptomen, bei denen der Appendix bei der gewoehnlichen Incision nicht gefunden werden kann soll eine Medianschnitt über dem Nabel gemacht werden. Man findet dann die Ileocecalstelle und kann die Incision verlängern, falls nötig. Ein Fall von linksseitiger Appendicitis bei einem Patienten mit partiellem situs viscerum inversus wird berichtet. Operation resultierte in Heilung.

SUMARIO

Un caso de apendicitis del lado izquierdo, con mención de la literatura

Un apendice del lado izquierdo puede ser congéntia ó adquirida. El tipo congénito puede resultar de total ó parcial situs viscerum inversus, excesiva longitud del apendice vermiforme ó la anomalia, "mesenterio comun." El tipo adquirido puede ser causado por procesos inflamatorios ó tumores. El dolor en apendicitis del lado izquierdo puede ser localizado al punto de McBurney porque la inervación no puede ser trastornada. Enfermos con síntomas del lado izquierdo deben de ser examinados cuidadosamente para ver si hay tranposición de la viscera. Roentgenografia ayuda grandemente en el estudio y diagnóstico. En enfermos con síntomas del lado derecho, en los cuales la insición usual no muestra el apendice, una insición media supraumbilical debe hacerse. La unión ileo-cecal puede ser localizada entonces y la insición alargada

si es necesario. Un caso de apendicitis en un enfermo con parcial situs viscerum inversus es reportado. La operación tuvo un buen resultado.

RIASSUNTO

Un caso di appendicite sinistra, con citazioni bibliografiche

L'appendice sinistra puo' essere congenita o acquisita. Il tipo congenito puo' risultare da una totale o parziale inversione viscerale, eccessiva lunghezza del processo vermiforme, o per anomalia "mesentere comune." Il tipo acquisito puo' essere causato da processo infiammatori o da tumore. Il dolore nelle appendiciti sinistre, puo' essere localizzato al punto di "McBurney," perche' l'innervazione puo' non essere disturbata. Gli ammalati con sintomi localizzati a sinistra o con manifestazioni cliniche caratteristiche di appendicite, dovrebbero essere esaminati accuratamente per trasposizione viscerale. Gli studi radiografici aiutano grandemente nelle diagnosi. In ammalati con sintomi al lato destro, nei quali l'usuale incisione non mostra l'appendice, si dovrebbe ricorrere ad una incisione mediana al di sopra dell'ombellico. La giunzione, cecale puo' essere localizzata e l'incisione, se necessario, estesa. E' riportato un caso di appendicite in un ammalato con parziale inversione viscerale. L'operazione produsse la guarigione.

INTERNATIONAL ASSEMBLY HEADQUARTERS

Headquarters for the meeting of the International Assembly of the International College of Surgeons, August 10 to 14, 1941, will be at the Hotel Reforma, Mexico, D.F. Date of the meeting of the House of Delegates will be announced later.

Herpes Zoster as a Sequel of Spinal Anesthesia

D. G. ARNOLD, M.D., Associate Member I.C.S.

BUCYRUS, OHIO

A RECENT study[1] which includes a review of 110 published articles on the subject of neurological changes following spinal anesthesia covers a multitude of manifestations of nerve injury but fails to mention herpetiform lesions associated with neuralgic pain as a complication. Search elsewhere in the literature likewise has failed to disclose any reports of this particular sequel to spinal anesthesia, although Carter[2] in 1937 reported one case following lumbar puncture, which he attributed to a mild irritative trauma of the dorsal roots. It is therefore of interest that three such cases have been observed in a series of 640 operations performed by me under spinal anesthesia in a small hospital where all of the after-care was under my personal observation.

That these three cases were not coincidental is apparent from the fact that in all three the lesions appeared in areas of nerve distribution which were anesthetized.

Some authors[3] have attributed postanesthetic radiculitis to injection of the drug into a nerve root. In these three cases this explanation cannot be held tenable because again the sites of the lesions were not such that the corresponding nerve roots would have been punctured by a spinal puncture made between the fourth and fifth lumbar vertebrae, as was here done. Furthermore, in case no. 2 the lesions were bilateral, and since the tap was easily done with one insertion of the needle, it would have been impossible to injure nerve roots on both sides.

The above-cited article[1] very adequately discusses the possibility of toxic nerve injury apart from meningitis of infectious origin, presenting not only many clinical cases, but also the results of abundant histologic studies of the effects of spinal anesthetic agents in animals, which quite definitely prove this possibility. It seems most probable that in my cases the injury was of this type.

The anesthetic agent used in this series was procaine hydrochloride in 635 cases and pontocaine in five. Of the three patients who developed zoster-like lesions, procaine was used in two, pontocaine in one.

CASE REPORTS

Case No 1—Mrs D U, age 30 Diagnosis incomplete abortion, possible tubal pregnancy A spinal anesthetic of 150 mg procaine was administered because of the possible necessity of laparotomy Dilatation and curettage revealed a piece of retained placenta, which was quickly removed The spinal puncture had been easily done The procaine crystals were dissolved in 5 cc of cerebrospinal fluid and *reinjected*. Anesthesia was complete to the umbilicus.

Five hours after being returned to her room, the patient complained of a severe, *stinging*, burning sensation over the dorsum of the right foot. Inspection revealed three slightly elevated red patches surmounted by small vesicles and located in a cluster over the arch of her foot Eight hours later the vesicles were much larger The pain was quite severe and lasted for four weeks before entirely disappearing After the first twenty-four hours the contents of the vesicles became milky and then gradually absorbed, leaving crusts which separated in ten days Pigmented patches remained

Case No 2—Mrs B R, age 36 Diagnosis subacute appendicitis perineal relaxation, cervical laceration, eversion and erosion Trachelorrhaphy, perineorrhaphy and appendectomy were performed The anesthetic agent was procaine hydrochloride 150 mg in 5 cc of cerebrospinal fluid, *injected through the fourth* lumbar interspace without difficulty. Anesthesia began to wear off in 45 *minutes* and was supplemented with drop ether for an additional 25 minutes

Thirty six hours after operation the nurse noticed a cluster of vesicles on the right thigh about two inches below the middle of the inguinal ligament. They were six or seven in number and filled with clear fluid. When called to the patient's attention, she exclaimed, "So that is what has hurt so badly." The next day a second patch of vesicles appeared on the left side of the abdomen one inch medial to the anterior superior iliac spine. Both patches had the characteristics of herpes zoster, running the usual course and disappearing about the end of the second week

Case No. 3.—Mr. W. B., age 53. Diagnosis bilateral inguinal hernia. Bilateral herniorrhaphy was done under spinal anesthesia, pontocaine being used Difficulty was encountered by the anesthetist in making the puncture, his note indicating that considerable arthritis was present in the spine. Anesthesia was complete and well sustained until after the patient was returned to bed

On the third postoperative day the patient complained of sharp stinging pain in the great toe of his left foot. Examination revealed a solitary pea-sized vesicle just lateral to the corner of the nail on the great toe. Pain continued for two days, then the contents of the vesicle gradually absorbed. No crust formed because of the thickness of the skin. On the fifth day the overlying skin was removed and a slightly depressed area was left.

In case no. 1, with lesions on the dorsum of the right foot, the nerve affected was the fifth lumbar. In case no. 2, with lesions below the inguinal ligament on the right thigh and on the lower abdominal wall on the left, the nerve roots affected were the first, second and third lumbar. In case no. 3 either the fifth lumbar or the first sacral nerves enervated the involved area of the toe.

Since the punctures were made in the fourth lumbar interspace, if a nerve root had been injured it should have been the fourth, which supplies the median and lateral surfaces of the thigh, the anterior surface of the knee and the anterior and internal surfaces of the leg.

SUMMARY

Zoster-like lesions as a complication of spinal anesthesia have apparently not been frequent or have not been reported. Three cases of such lesions are here reported from a series of 640 cases (.047 per cent). Causation probably was toxic action of the anesthetic agent.

REFERENCES

1. Light, G., Sweet, W. H., Livingstone, H., and Engel, R.: Neurological Changes Following Spinal Anesthesia, Surgery 7: 138-156, 1940.

2. Carter, H. R.: Herpes Zoster, a Case Following Lumbar Puncture, Am. J. Psych. 94:373-378, (Sept.), 1937.

3 Babcock, W. W.: Spinal Anesthesia—An Experience of Twenty-Four Years, Am. J. Surg. 5:571-576, 1928.

RÉSUMÉ

Herpes Zoster en suite à anesthésie spinale

Lésions qui résemblent le zoster comme complications d'anesthésie spinale en apparence n'ont pas été frequentes ou n'ont pas été réportées. Trois cas de lésions semblables viennent ici réportés dans une serie de 640 cas (0.047%). La cause probabilement consiste dans l'action toxique de l'anesthésique.

ZUSAMMENFASSUNG

Herpes Zoster als Folge von Rückenmarksanesthesie

Zoster ähnliche Schädigungen als Komplikation von Spinalanesthesie waren anscheinend nicht häufig oder wurden nicht berichtet. Drei Fälle solcher Schädigungen werden hier beschrieben aus einer Serie von 640 Fallen (0.047%). Die Ursache war offenbar eine toxische Wirkung des Anestheticum.

SUMARIO

El Herpes-Zoster como una secuela de la raqui-anestesia

Parece que las lesiones semejantes al Herpes-Zoster como complicación de la raqui-anestesia, no han sido frecuentes o no han sido reportadas. Tres casos de tales lesiones se reportan aquí, de una serie de 640 casos (0.047%). La causa probablemente fué la acción del agente anestésico.

RIASSUNTO

Erpes Zoster in seguito ad anestesia spinale

Lesioni simili allo zoster come complicazioni di anestesia spinale apparentemente non sono state frequenti o non sono state riportate. Tre casi di simili lesioni vengono qui riportati in una serie di 640 casi (0.047%). La causa probabilmente consiste nell'azione tossica dell'anestetico.

Observations on the Management of Goiter

JOHN M. WILSON, M.D., F.A.C.S., F.I.C.S.

MOBILE, ALABAMA

ALTHOUGH Mobile is not in the goiter belt, nevertheless thyroid disease is frequently encountered in this section.

That some forms of goiter are often not recognized, or are inadequately treated, is shown by the large number of men and women seen in advanced stages of thyroid disease. The result is morbidity, economic loss and mortality.

During the many years that the subject of goiter has been of interest, encouraging advances have been made in its diagnosis and treatment. It has been shown, more or less definitely, that adolescent and simple colloid goiter are at least partly caused by iodine deficiency. Of course, prophylaxis is the ideal treatment in these types of goiter.

ADOLESCENT GOITER

A great many adolescent goiters will undergo involution and the gland return to normal after maturity. Occasionally, however, there will remain an enlargement of the thyroid, usually symmetrical, but sometimes nodular. This type of goiter sometimes responds to treatment, but is frequently very refractory. The metabolism in such cases is usually normal or below normal. Cautious administration of small amounts of iodine with small doses of thyroid extract, when indicated, will at times, in the young, reduce the size of the gland. This type of gland is filled with colloid and as a rule is not hyperplastic.

The taking of very small amounts of iodine in the form of iodized salt or potassium iodide added to the drinking water has been shown definitely to lessen the incidence of endemic or colloid goiter in children. Colloid nodules or true adenomas in the very young do not call for surgery, unless causing pressure or for cosmetic reasons. Nodular goiters in patients twenty-five years or over are, to say the least, potentially surgical.

TOXIC GOITER

Toxic goiter may present an unmistakable appearance, easy of diagnosis, or it may be protean and insidious, difficult of diagnosis, particularly in distinguishing it from neurosis or so-called neurocirculatory asthenia with tachycardia and thyroid enlargement. The enlarged thyroid is sometimes coincidental with the neurosis.

The toxic goiter patient will usually be warm, moist, hungry, full of energy, not constipated, and will most always have an increased basal metabolic rate, increased pulse pressure and heat intolerance. The patient with a neurosis, or neurocirculatory asthenia, while exhibiting tachycardia, possibly enlarged thyroid and nervousness, usually will have cold hands, dry skin, a tired feeling, even after sleep and rest, frequently a decreased appetite, constipation, sensitivity to cold and usually normal pulse pressure.

If the diagnosis is in doubt, rest, proper diet and sedation should be carried out, with operation deferred until definite diagnosis of toxic goiter is made and symptoms warrant it. There seems to be no danger in waiting under such circumstances; and if the condition is one of toxic goiter, it will most likely develop sooner or later into a frank case. In the hyperthyroid case, improvement is usually very marked following operation, while if operation is performed in the case of a neurosis without hyperthyroidism, the patient will no doubt be made worse.

Thanks to Dr. Henry Plummer, the use of iodine in the management of toxic goiter is now fairly well standardized. Before the use of this drug, the dreaded thyroid crisis was a not infrequent occurrence.

Some points are very important in the handling of toxic cases. Hospitalization is preferable. As far as possible, patients should be isolated from noise, excessive company and anything that will interfere with quietude and pleasant surroundings. They should be kept in bed, but unless there is some contraindication, such as cardiac decompensation, they should be allowed lavatory privileges. Sedation is important. For this purpose luminal may be prescribed once or twice daily. If this does not prove satisfactory, other forms of sedation may be instituted.

These patients should be given Lugol's solution in orange or grape juice—in very toxic cases 30 drops three times a day. Ordinarily, 15 drops three times a day is sufficient.

If the patient has been given iodine for some time before being seen, it is usually best to leave off the iodine for a while, using only rest and sedation. Of course, the patient is again placed on iodine before surgery is undertaken. Digitalis is given in all cases of cardiac decompensation and where otherwise indicated. If auricular fibrillation is present, quinidine is useful. A full carbohydrate diet, with plenty of milk, is given.

This procedure should be carried out from four or five days to three weeks or longer, depending on the response to treatment, in preparation for surgery. Usually in four or five days, particularly if the patient has not been taking iodine over a long period of time, he will become quiet and the metabolic rate and pulse rate will decrease.

OPERATION

Iodine should be used in preparation for surgery in all forms of toxic goiter. It seems to give best results in toxic diffuse goiters, either with or without exophthalmos. Experience is the best guide as to the proper time to operate.

When that time has been decided upon, there are two important questions: first, whether a one- or two-stage operation should be done; second, the choice of anesthetic. As to the first question, experience is the best guide. If there is any doubt, a two-stage operation should be done, the second stage being performed at the end of six weeks.

As to anesthesia, all goiter surgeons are not of the same opinion. Some think that with some form of gas anesthesia (not too light) laryngospasm is less apt to occur. The great majority of the writer's operations are done under local anesthesia (¾ per cent novocaine) supplemented at times with nitrous oxide and oxygen. Oxygen is nearly always given during (and in very toxic cases, following) operation. It takes some strain off the heart and makes the patient much more comfortable. Following operation the patient is kept quiet with morphine or pantopon, and in most instances is given intravenous glucose drip, 10 per cent, to each liter of which has been added 50 drops of Lugol's solution. This is a most useful way of administering iodine, particularly in very toxic exophthalmic goiter, and undoubtedly is a strong factor in the prophylaxis of the dreaded crisis. It is continued as long as deemed necessary.

Proper nursing is essential in the care of the hyperthyroid patient. It is very important that nurses caring for this class of patient should have special training so that they will be alert and able to recognize the signs and symptoms of an impending crisis and be familiar with and able to carry out the nursing procedures required.

Finally, it may be said that possibly in no other field of surgery can better results be obtained than in that of toxic goiter, provided early diagnosis is made, and appropriate and adequate treatment instituted before permanent damage has been done.

SUMMARY

The author points out that:

1. Goiter, though not as prevalent in the Mobile, Alabama, area as in some sections, is nevertheless found in various forms.
2. Its presence is frequently unrecognized or inadequately treated. This is followed by considerable economic loss, morbidity and even mortality.
3. Much good work has been done, particularly Plummer's introduction of iodine as an adjunct to surgery in toxic goiter, as shown by decreased mortality and by increased recovery of the seriously ill.
4. Prophylaxis is the best treatment for simple or adolescent goiter.
5. Nodular goiter in patients twenty-five years of age or over is potentially toxic or malignant and, therefore, in most instances should be considered at least potentially surgical.
6. Toxic goiter may present a frank appearance or may be protean and insidious.
7. Symptoms distinguishing toxic goiter from neurosis with enlarged thyroid and tachycardia are given.
8. Important points in treatment of toxic goiter, including type of operation and anesthetic, and preoperative and postoperative care, are discussed. Early diagnosis and treatment are stressed.

RÉSUMÉ

Observations sur le control du goitre

L'auteur fait remarquer que:

1. Le goître, quoique pas très frequent dans Mobile, Alabama comme dans d'autres parties, cepandant on le trouve dans diverses formes.
2. Sa presence est souvent pas reconnue ou il est traité insuffisamment. Ça est suivi par une considerable perte économique, morbilité et mortalité.
3. Tres bon travaila été fait, particulièrement la introduction, due à Plummer, du iode comme accessoire à la chirurgie dans le goître toxique, comme il est demontré par la mortalité et par un plus grand nombre de guairisons parmi les individus serieusement malades.
4. La prophylaxie est le meilleur traitement pour le goître simple ou d'adolescent.
5. Le goître nodulaire dans les malades de 25 ans ou plus est potentialement toxique ou malin et pourtant la plupart des fois devrait être considéré au moins potentialement pour la chirurgie.
6. Le goître toxique peut se présenter clairement ou peut être proteiforme et insidieux.
7. Les symptômes qui distinguent le goître toxique de la neurose avec large thyroïde et tachicardie sont décrits.
8. Des points importants dans les traitement du goître toxique, y compris les types d'opérations et d'anesthetic et le traitement pré et postopératif, sont ici décrits. L'importance d'un diagnostique précoce et d'un précoce traitement est soulignée.

ZUSAMMENFASSUNG

Beobachtungen an Kropfbehandlung

Der Autor weist darauf hin dass:

1. Obwohl Kropf, in der mobilen Alabama Region nicht so häufig ist wie in manchen anderen Gegenden, er trotzdem in verschiedenen Formen angetroffen wird.
2. Sein Vorhandensein oft nicht erkannt oder unzulänglich behandelt wird. Dieser Umstand hat beträchtlichen ökonomischen Schaden, Kränklichkeit und sogar Todesfälle zur Folge.
3. Viel nützliche Arbeit getan wurde, besonders durch Plummer's Einführung von Jod, als Zusatz zur Chirurgie bei toxischen Kropf, wie durch Mortalität und gesteigerte Besserung der schwer Kranken bewiesen wurde.

4. Prophylaxis die beste Behandlung für einfachen und jugendlichen Kropf ist.

5. Knotenkropf in Patienten von 25 Jahren und darüber, möglicherweise toxisch oder maligen ist, und daher als chirurgisches Problem betrachtete werden muss.

6. Toxischer Kropf klar, oder mannigfaltig und heimtückisch in Erscheinung treten kann.

7. Es werden die Symptome, die toxischen Kropf von Neurose mit vergrösserter Schilddrüse und Tachycardie unterscheiden, gegeben.

8. Wichtige Punkte der Behandlung von toxischen Kropf, inklusive Arten der Operation und Anesthesie und pre- und postoperative Behandlung sind besprochen. Frühe Diagnose und Behandlung wird hervorgehoben.

SUMARIO

Observaciones en el tratamiento del bocio

El autor señala que:

1. Aún cuando el bocio no es predominante en al área de Mobile, Alabama, como en algunas secciones, es encontrado, sin embargo, en varias formas.

2. Su presencia no se reconoce frecuentamente ó es tratado inadecuadamente. A esto le sigue una pérdida económica considerable, un estado mórbido y aun la mortalidad.

3. Plummer ha hecho muy bien al introducir el yodo como un coadyuvante de la cirujía en el bocio tóxico; ésto es demostrado por la mortalidad y por la gran mejoría de los seriamente enfermos.

4. La profilaxis es el mejor tratamiento para el bocio simple ó para el bocio en los adolescentes.

5. El bocio nodular es potencialmente tóxico ó maligno en los pacientes de 25 o más años de edad y por lo tanto en la mayoría de los casos se debería considerar al menos potencialmente quirúrgico.

6. El bocio tóxico puede presentarse en una forma franca o puede ser variable y engañoso.

7. Se dan los síntomas que distinguen al bocio tóxico de la neurosis con engrandecimiento tiroídeo y taquicardia.

8. Se discuten puntos importantes en el tratamiento del bocio tóxico incluyendo el tipo de operación y anestésico y los cuidados pre- y post-operatorios. Se le da importancia al diagnóstico precoz y al tratamiento.

RIASSUNTO

Osservazioni sul controllo del gozzo

L'A.mette in evidenza che:

1. Il gozzo, benché non così prevalente nell'area di Mobile, Alabama come in altre parti, si trova tuttavia in varie forme.

2. La sua presenza è spesso non riconosciuta o trattata inadeguatamente. Questo fatto è seguito da considerevole perdita economica, morbilità e anche mortalità.

3. Molto buon lavozo è stato fatto, particolarmente la introduzione che Plummer ha fatto dello iodio come accessorio alla chirurgia nel gozzo tossico, come è dimostrato dalla mortalità e da un aumentato numero di guarigioni tra gli individui seriamente ammalati.

4. La profilassi è il miglior trattamento per il gozzo semplice e degli adolescenti.

5. Il gozzo nodulare in malati di 25 anni o più è potenzialmente tossico o maligno e perciò il più delle volte dovrebbe essere considerato almeno potenzialmente per la chirurgia.

6. Il gozzo tossico può presentarsi nettamente o può essere proteiforme e insidioso.

7. Sono descritti i sintomi che distinguono il gozzo tossico dalla neurosi con larga tiroide e tachicardia.

8. Punti importanti nel trattamento del gozzo tossico, inclusi i tipi di operazione e di anestetico, e il trattamento pre e postoperativo, vengono qui discussi. Viene sottolineata l'importanza di una diagnosi precoce e di un precoce trattamento.

Lymphosarcoma of the Ileum*

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MILWAUKEE, WISCONSIN

REVIEW OF THE LITERATURE

LYMPHOSARCOMA has been found in every segment of the gastrointestinal tract. Broders and Mahle, in reporting 12 cases of lymphosarcoma of the stomach, give its incidence in comparison to carcinoma as 1 to 68. In a series of 301 cases of sarcoma of the intestine, Crawford found the exact location mentioned in 129 cases: duodenum 12, duodenum and jejunum 32, jejunum and ileum [illegible] through the

Cameron[4] collected 196 cases of malignant tumors of the jejunum-ileum reported from 1930 to 1937 and added 4 cases of his own. These were located in the following sites: jejunum 104, ileum 89, undetermined 7. In the same 200 cases the histologic diagnosis was sarcoma in 78, leiomyosarcoma 9; fibrosarcoma 10, lymphosarcoma 43; Hodgkin's disease 4; endothelium 4; unclassified 10. Dixon[7] in 1936 reported a case of lymphosarcoma of the cecum. Horsley[8] in 1937 reported one case in the ileum. Jackson[9] and Gilman[10] in 1938 each reported one case primary in the jejunum.

Medinger[11] in 1939 reported the malignant tumors of the small intestine found in 1,456 necropsies and 41,000 surgical specimens observed at the New England Deaconess and Palmer Memorial Hospitals from January, 1927, to January, 1939. His data are: duodenum 3, jejunum 12; ileum 7. Of these 22 cases leiomyosarcoma was found at autopsy as follows: jejunum 1; ileum 2; surgical-ileum 3; total 6.

Lewis in 1939 reported one case of leiomyosarcoma of the ileum and one case of lymphosarcoma of the jejunum. Cohn, Landy and Richter[3] in 1939 reported 7 cases: leiomyosarcoma of the ileum 2, leiomyoma of the ileum 2; leiomyoma of the jejunum 1, lymphosarcoma of the ileum 1; anaplastic carcinoma of the jejunum 1.

With the addition of the case herein reported, we have a grand total of 470 cases of primary sarcoma of the gastrointestinal tract.

Libman[5] states that not a single case of primary sarcoma of the intestines was observed in the Berlin Pathological Institute from 1859 to 1875. Nothnagel[15] reported only 9 cases of sarcoma in 21,358 autopsies in the General Hospital of Vienna from 1882 to 1893. Smoler[16] found 13 cases of primary sarcoma of the small intestine in 13,036 autopsies performed between 1883 and 1898 at the Prague Pathological Institute. Warthin[17] reported 2 cases of lymphosarcoma of the small intestine in an analysis of 2,000 malignant tumors in young people between one and thirty years of age, examined in the Pathological Laboratory of the University of Michigan.

The largest series of cases of lymphosarcoma of the intestines collected in one clinic in this country is reported by Rankin and Chumley[18] from the Mayo Clinic and comprises 18 cases of the large bowel. Nickerson and Williams[19] in 1937 reported 10 cases of primary neoplasm of the small intestine: carcinoma 8; sarcoma 2. No case of lymphosarcoma was discovered in 11,206 autopsies performed at the Boston City Hospital between 1896 and 1935.

SYMPTOMATOLOGY

Lymphosarcoma is rarely diagnosed prior to operation and is most frequently recognized on the autopsy table. No triad of symptoms constantly occurred in the reported cases. The first attack may simulate an acute abdominal infection and is usually diagnosed as acute appendicitis or as general constitutional symptoms of anemia, cachexia, weakness. The pain is colicky with little tendency to localize.

Rankin[20] states, "The bowel is frequently dilated proximal to the tumor because of paralysis of the musculature from the direct invasion of the malignancy. The fact that there is a dilatation of the bowel about the growth, rather than a stenosis, produces an intermittent obstruction which probably accounts for a more constant chain of symptoms than any other single factor."

Blood may be found in the stool, and massive bowel hemorrhage has occurred in leiomyosarcoma. Intussusception has been observed in a number of cases. In Lewis' case of lymphosarcoma of the jejunum perforation occurred, and he collected six other cases from the literature with perforation. Obstruction is found in 80–90 per cent of carcinoma cases and in 50–60 per cent of sarcomas. The age varies from 1 to 70 years, the average being 40 years. The ratio of males to females is 5 to 2.

PATHOLOGY

Lymphosarcoma of the intestines has been described under various names. It is most frequently reported as "sarcoma" of either the small or the large round-cell type. It has also been reported as lymphocytoma, lymphoblastoma, intestinal Hodgkin's disease, chronic inflammatory tumor, lymphoid granulomatosis pseudoleukemia. These names are used interchangeably.

Ewing[21] defines lymphosarcoma as "a true malignant neoplasm arising in lymphatic tissue from proliferation of atypical lymphocytes. [It] occurs as (1) a localized or (2) a diffuse process. The former is more malignant than the latter, but its rapid course, as well as the occurrence of intermediate types of cases, indicates that there is no other important distinction between them. It is distinguished from other types of lymphoma by its local destructive capacity and by the formation of true metastases in distant regions."

Gross pathology.—Lymphosarcoma of the intestine appears as an annular or polypoid growth. The two types may be found in the same case. The annular type is most frequently described in the literature and is found as a single growth. The polypoid type is frequently multiple, appearing as localized outgrowths projecting from the intestinal wall into the lumen.

Microscopic pathology.—The structure of lymphosarcoma is rather specific—a diffuse growth of lymphoid cells lying in reticular tissue. The cells vary in size from small to medium or large with the nuclei compact or vesicular, hyperchromatic. No giant cells are found; multinuclear cells may be found. In the origin of lymphosarcoma two specific cells participate: (1) the reticulum cell of the germ centers of follicles and pulp cords; (2) the lymphocyte. The resulting conditions may be designated as: (1) reticular cell sarcoma or large round-cell lymphosarcoma; (2) malignant lymphocytoma.

CASE REPORT

A white male, age 58, was first seen on April 3, 1934. He had been complaining of poor appetite for three weeks, of coughing, profuse sweating, chills intermittently for two weeks, pain in the left costovertebral angle radiating to the left thigh. He had lost 14 pounds in three years.

Past history.—He had suffered from constipation for three years. All teeth had been extracted in 1924 owing to infection. He had worked every day for forty years as a machinist and watchman.

Physical examination.—Blood pressure was 128/80. There was marked emaciation. The mouth showed dark red mucous membrane with patches of light red color covered by fibrinous exudate; numerous small abscesses were seen. Severe pain resulted from light pressure in the left costovertebral angle and over the left ureter, with pain on deep pressure in the right costovertebral angle. Urine: Albumin, a trace; microscopic, pus cells, bacteria, a few red blood cells. Prostatic smear: 100-200 pus cells per high-powered field. Diagnosis: oral sepsis, chronic bronchitis, prostatitis, pyelonephritis, hemorrhoids.

The patient was admitted to St. Luke's Hospital on April 4, 1934. A cystoscopic examination was made April 5, 1934. Meatotomy: A no. 24 French cystoscope was passed with ease without anesthesia. Vesical orifice was concave; bladder showed moderate trabeculation with edema surrounding the left ureteral orifice. A no. 6 French X-ray catheter was passed up each ureter to the kidney pelvis with ease and cloudy urine obtained in drops from each side. Specimens were sent to the laboratory for cultures. Intravenous indigo carmine: Appearance time, right 2½ minutes; left 3 minutes. Concentration time, right 3½ minutes; left 3 minutes. A roentgenogram was taken, after which 8 cc. of sodium iodide 12½ per cent solution was injected into each kidney pelvis, catheters removed and pyelogram taken.

LABORATORY REPORT

Urine.—April 5, 1934. Albumin: trace; moderate number of wbc. and few rbc. Culture from each kidney showed staphylococci on 24-hour incubation.

Inoculation of guinea pigs with urine from each kidney showed no evidence of tuberculosis after 6-week incubation period.

Prostatic smear.—From 50 to 100 pus cells per high-power field.

Sputum.—Negative for tubercle bacilli.

Blood.—Average count. Hemoglobin 72 per cent, color index 9; rbc. 4,500,000; wbc. 9,900; erythrocytes, color normal; small lymphocytes 23 per cent; large lymphocytes 3 per cent; polynuclear neutrophils 72 per cent; eosinophils 2 per cent; basophils 1 per cent; Wassermann negative; Kahn test negative.

Roentgenograms.—Retrograde pyelogram April 5 showed no abnormalities. Intravenous pyelogram May 2 showed moderate amount of skiodan in each kidney pelvis in one hour.

Chest.—April 19. One large calcified body about 1 cm. in diameter was found in the left upper lung (old Ghons focus) with small calcified gland in the upper left hilus.

TREATMENT

Urotropin 60 grains per day was given every second day for ten days; fluids 3,000 cc. per day; glucose 1,000 cc. of 5 per cent solution, intravenous. April 23, 24, 25, May 1. Output 1,200-1,400 cc. per day.

Blood transfusions, 500 cc., were given with the use of a Vincent tube, May 3, 15, 17, 26, June 1. Cystoscopic examination was repeated May 1, to obtain more urine for guinea pig inoculation.

The temperature varied from 98 to 103 F. until June 6, 1934. The pulse varied from 80 to 140, the average being 110; respiration from 20 to 30. All symptoms continued, rapid emaciation, febrile course.

AUTOPSY REPORT

Autopsy was performed by Dr. E. L. Tharenger, *June 6, 1934.*

Heart.—The heart was small with a few minute subepicardial petechia. The pericardial fat was edematous. On section the myocardium showed a pale brownish color. The endocardium was stained yellowish throughout. On one of the chordae tendinae of the mitral valve there was a recent vegetation 4 mm. in diameter.

Duodenum.—The peritoneal surface was smooth and glistening throughout. On section the mucosa showed one nodule 4 mm. in diameter of a grayish white color.

Ileum.—The serous surface was smooth and glistening throughout. In the distal portion of the proximal third one area showed a thickened wall, with the peritoneal surface white. On section the tumor mass measured 3 by 1 cm. with ulceration of the mucosa. The mesenteric lymph nodes in this area were enlarged and soft.

Cecum.—The peritoneal surface was smooth and glistening with three nodules 4 mm. in diameter on the anterior surface; on section these became grayish white in appearance. The mucosa showed no noteworthy changes.

Histologic examination of ileum.—Figure 1 shows a diffuse infiltration of lymphoid cells with a poorly stained reticular tissue. The cells varied in size, with a large number of nuclei compact or vesiculated; a moderate number showed hyperchromatic nuclei.

Prostate.—(See Fig. 2.) The glandular acini showed the living epithelial cells well stained through and intact with their basement membrane. A large number of the lumen contained polymorphonuclear leukocytes. Between the glandular acini were found clumps of cells of the same appearance as those in the ileum.

Anatomical diagnosis.—(1) Oral sepsis. (2) Endocarditis (3) Septicemia. (4) Pyelonephritis. (5)

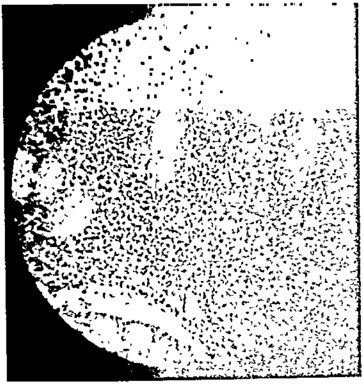

Fig. 1. Photomicrograph of ileum showing diffuse infiltration of lymphoid cells with compact or vesiculated nuclei.

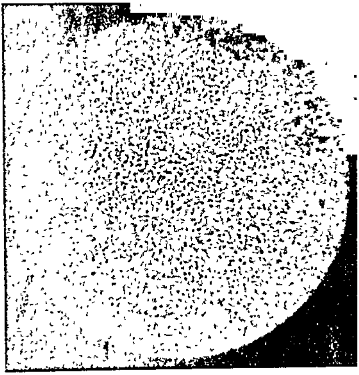

Fig 2. Photomicrograph of prostate showing same type of tumor cells between the glandular acini.

Ureteritis. (6) Cystitis. (7) Prostatitis (8) Mediastinitis, lobular pneumonia. (9) Acute hemorrhagic infarct of spleen. (10) Calcified lymph node, left hilus. Ghon's node in apex of lower lobe (11) Lymphosarcoma of the ileum with metastases to the prostate.

The histologic diagnosis was confirmed by Dr. Hugh R. Spencer, University of Maryland, and Dr. Herman Heise, Milwaukee.

TREATMENT

If the diagnosis is established before lymphatic extension occurs, radical resection of the involved gut and its mesentery offers the only chance of cure. When the tumor has extended so far that resection of the intestine is incompatible with life, a sidetracking operation is indicated. Radiation should be employed in every case, in the advanced case to prolong life and in the operative case to prevent recurrences.

As the bowel is frequently dilated proximal to the tumor, a more thorough study of the ileum during roentgenologic examination of the intestinal tract may prove to be life saving.

The prognosis is poor. Immediate operative mortality is 30 per cent. Five-year cure mortality is 10 per cent. Three cases have survived operation 8 years, two 13 years and one 20 years.

SUMMARY

Lymphosarcoma occurs in all parts of the gastrointestinal tract. The great majority of the 469 cases reported in the literature have been found at necropsy. Of these 20 per cent were primary in the ileum.

Routine examination of the small intestine during roentgenologic observation of the gastrointestinal tract offers the only hope of early diagnosis and radical resection.

REFERENCES

1. Broders, A. C., and Mahle, A E: Primary Lymphosarcoma of the Stomach, J. Lab. & Clin Med. 6:249 252, 1921
2. Crawther, C.: Clin. chir. Milano 21:2107, 1913.
3. Corner, E. H., and Fairbanks, H. A T.: Sarcoma of the Alimentary Tract, Practitioner 77:810, 1904.
4. Ullman, A., and Abeshouse, B. S.: Lymphosarcoma of the Small and Large Intestines, Ann. Surg. 95:878 815, 1932.
5 Graves, S.: Primary Lymphoblastoma of the Intestine, J. M. Research 40.415, 1919.
6. Cameron, A. L.: Primary Malignant Tumors of the Jejunum and Ileum, Ann. Surg. 108:203-220, 1938.
7. Dixon, C. F.: Lymphosarcoma of the Caecum, Proc. Staff Meet., Mayo Clin. 11:30-31, 1936
8. Horsley, J. S., and Keasburg, L. E.: in Lewis, D.: Practice of Surgery, 1937, vol. 6, chap. 17, pp. 72-74.
9. Jackson, A. S.: Lymphosarcoma of the Jejunum, Wisconsin M. J. 37:478, 1938.
10 Gilman, P. K: Malignant Disease of the Small Intestine, West. J. Surg. 46:269-275, 1938.
11. Medinger, F. G.: Malignant Tumors of the Small Intestine, Surg., Gynec. & Obst. 69:299-305, 1939.

12. Lewis, D. L.: Lymphosarcoma of the Ileum, Brit. J. Surg. 26:540-546, 1939.
13. Cohn, S., Landy, J. A., and Richter, M.: Tumors of the Small Intestine, Arch. Surg. 39:647-666, 1939.
14. Libman, E.: Sarcoma of the Small Intestine, Am. J. M. Sc. 129: 813-817, 1905.
15. Nothnagel, C. W. H.: Diseases of the Intestines and Peritoneum, 1907, p. 460.
16. Smoler, F.: Prag. med. Wchnschr. 23:135, 1898.
17. Warthin, A. S.: The Occurrence of Malignant Neoplasms in the Young, Arch. Int. Med. 15:444, 1915.
18. Rankin, F. W., and Chumley, C. S.: Lymphosarcoma of Colon and Rectum, Minnesota Med. 12:247, 1929.
19. Nickerson, D. A., and Williams, R. H.: Malignant Tumors of the Small Intestine, Am. J. Path. 13:53-64, 1937.
20. Rankin, F. W.: Lymphosarcoma of the Small Intestine, Ann. Surg. 80:704-711, 1924.
21. Ewing, J.: Neoplastic Diseases, ed. 2, Philadelphia, W. B. Saunders, 1922.

RÉSUMÉ

Lymphosarcome de l'ileum

Le lymphosarcome se presente dans tous les parties de l'apparat digestif. La majorité des 469 cas reportés dans la litérature a été trouvée à l'autopsie. Parmi ceux-ci 20% étaient primaires dans l'ileum. Un examen régulier de l'intestin grêle pendant observations radiologiques du canal digestif offre le seule éspoir d'un diagnostique précoce et d'une resection radicale.

ZUSAMMENFASSUNG

Lymphosarcoma des Ileum

Lymphosarcoma kommt in allen Teilen des Magendarmtraktes vor. Der Grossteil der 469 Fälle die in der Literatur berichtet wurden, wurden bei der Autopsie gefunden. 20% von diesen waren primär im Ileum. Routine Untersuchung des Dünndarm während Röntgenologischer Beobachtung des Magendarmtraktes, bietet die einzige Hoffnung auf eine frühe Diagnose und radikale Resektion.

SUMARIO

Linfosarcoma dell'ileo

El linfosarcoma se presenta en todas las partes del trayecto gastrointestinal. La mayoría de los 469 casos reportados en la literatura se han encontrado en la necropsia. De estos, el 20% tuvieron origen en el ileum.

El examen rutinario del intestino delgado durante la observación radiológica del trayecto gastrointestinal ofrece la única esperanza de un diagnóstico precoz y de una resección radical.

RIASSUNTO

Linfosarcoma dell'ileo

Il linfosarcoma si presenta in tutte le parti dell'apparato digerente. La grande maggioranza dei 469 casi riportati nella letteratura è stata trovata all'autopsia. Di questi 20% erano primari nell'ileo. Esame regolare dell'intestino tenue durante osservazioni radiologiche del canale digerente offre la sola speranza di una diagnosi precoce e di una resezione radicale.

MEMBERSHIP CARDS FOR REGISTRATION AT INTERNATIONAL ASSEMBLY

Members, Associate Members and Fellows will please obtain their membership cards from Mr. Ralph Osborne, Business Secretary, 2543 Parkwood Avenue, Toledo, Ohio. These cards will be honored at the International Assembly in Mexico City.

Clinical Consideration and Analysis of 69 Cases of Ectopic Pregnancy*

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THE impregnated ovum may become arrested in any part of the tube. The section in which it most frequently finds lodgment is the ampulla of the tube, the most expanded part of the duct and the richest in blood vessels. The cause is most frequently found in the various forms of chronic salpingitis. Due to the associated loss of epithelium and other changes in the tubal wall, causing adhesions of the folds of the tube, the two active forces which propel the ovum through the tube—ciliary movements and peristalsis—are weakened and destroyed, while unimpeded ingress is afforded to the spermatozoa.

Again, the passage of the ovum may be interfered with by the secondary results of inflammation. These are congenital malformation, such as a diverticulum, or some local disturbance, such as dilatation or constriction or flexion of the tube due to adhesions, or the results of associated peritoneal inflammation or inflammation from adjoining organs or tumors; in fact, anything which interferes with the process after fertilization and trophoblastic formation, when the ovum has the power of implanting itself.

Because of its frequent connection with inflammatory processes, the occurrence of tubal pregnancy is often preceded by a long period of sterility (one-child sterility). When due to constriction, the closure of the tube may be only partial, permitting the spermatozoa to reach the ovum, while the latter, due to increase in size attendant upon fertilization, finds its progress arrested.

The normal mechanism by which the ovum is conveyed into the uterus is no doubt due to peristalsis of the tube and the current which is produced by the ciliated epithelium.

Tubal pregnancy is associated with the formation of a uterine decidua, the function of which appears to be a protective mechanism against the chorionic villi at the site of implantation. The uterine decidua of a tubal pregnancy differs from that of a uterine pregnancy only in that the distinction into three layers is less marked. No structure other than the uterus with a dense decidua can fulfill such demands and must give way to the cytolytic process of placental implantation. The complete decidua with the tubal sac enclosing the ovum is exceptional during the early stages of growth. It follows that decidual formation never occurs to any marked degree in the tube.

Decidual formation forms one of the strongest barriers to invasive action of the trophoblast covering the chorionic villi. The latter is allowed free play and burrows deeply into the tubal wall, destroying the wall of the tube and perforating the serous coat. Such perforations constitute abdominal catastrophe, and the patient dies with symptoms of internal hemorrhage.

The development of the chorion is like that of the uterine gestation. The lumen of the tube, at both the proximal and distal extremities, normally remains patent. In the early months the development of the ovum leads to a spindle-shaped dilatation of the tube, which is associated with hypertrophy of the muscular wall, due to the increase in length and thickness of the individual fibers. If one examines the tube of an early tubal pregnancy, he will see a punched-out area at the site of the pregnancy. In the same area a thickening at one point may be accompanied by an excessive degree of tenuity at another. The ultimate fate of a tubal pregnancy is in large measure dependent upon these anatomical differences.

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The number of specimens of early rupture of the tube which we have examined failed to show that the rupture was delayed later than the tenth or twelfth week.

In one of our cases where pregnancy reached an advanced stage, development of the tube took place principally between the folds of the broad ligaments. When the tube ruptures, the ovum is extruded between the folds of the broad ligaments, where it continues to grow. The support furnished to the tubal sac by the gradual unfolding of the layers of the ligament hinders rupture.

Interstitial pregnancy, as applied to a case in which the ovum develops in the uterine portion of the tube, occurred in two of our patients. This type is not discovered early and probably develops into an abdominal pregnancy.

We were fortunate in operating on two cases of interstitial pregnancy before rupture and carefully studied the specimens removed. We found that the ovum embeds itself in the uterine muscle because the wall of the tube is very thin in the interstitial portion. The muscular wall hypertrophies and forms a sac around the ovum which projects from the upper angle of the uterus. Since ordinarily the ovum does not keep pace with the growth of the muscular tissue, rupture occurs at a later period and the symptoms of pain and threatened rupture occur much later. The physical signs, in the early stages, are almost absent, with the exception of a small mass in the cornu of the uterus. Interstitial pregnancy is uniformly fatal by primary interperitoneal rupture with massive hemorrhage due to larger vessels in the uterus than in the tube.

The so-called abdominal pregnancies are unquestionably of tubal origin. In reality, they are for the most part extraperitoneal and result from a rupture of the tubal wall. The fetus then dies and becomes shriveled up, converted into a mummified mass in which lime salts are deposited. This is known as a condition of lithopedion. A lithopedion may remain embedded for years without injury to the mother. The presence of lithopedion does not prevent other pregnancies from taking place. In one of the author's cases a lithopedion had existed abdominally for over ten years without injury to the patient.

SYMPTOMATOLOGY

The earlier symptoms of extra-uterine pregnancy do not materially differ from those of the intra-uterine form. Menstruation usually ceases, though not with the same regularity as in normal pregnancies. The recurrence of the monthly flow for one or two periods is not an uncommon incident. In some cases a nearly continuous dark, bloody discharge of moderate extent has been observed. Up to a certain point, the hypertrophic changes of the uterus take place in the usual manner. The mucous membrane is converted into a decidua and a mucous plug fills the cervix. In some cases of tubal pregnancy there has been no increase in the size of the uterus.

Decidual cast from an abnormal reaction in the uterus to tubal pregnancy may resemble very closely the fetal sac; unless verified by the presence of the embryo floating in the fluid or by subsequent microscopic examination, the diagnosis of uterine pregnancy is not justified.

Characteristic symptoms of extra-uterine pregnancy do not occur until the ovum has reached a certain degree of growth, and in some cases not until after the rupture has taken place.

Cases presenting typical symptoms constitute but a small percentage of all tubal pregnancies. The other cases very often present atypical or minor symptoms, so as to be overlooked.

AUTHOR'S CASES

Below is presented a series of 69 cases of ectopic pregnancy, with an analysis of symptoms. Special care has been taken to obtain a correct history in an effort to determine what factors may predispose to an ectopic pregnancy.

We firmly believe that a correct clinical history is one of the most important factors in the diagnosis of ectopic gestation. We also believe that if a careful history has been taken, many cases can be diagnosed with great certainty without further examination. The age of the patients in our series varied from twenty to forty-three, 42 were between the ages of twenty and thirty. Twenty-five were primipara and the rest multipara. Twenty-two gave histories of being curetted from one to three times Twenty-nine had laparotomies for various surgical conditions, as follows:

Appendectomy	16 cases
Salpingo-oopherectomy	3
Salpingectomy	4
Suspension (Baldy-Webster)	5
Cesarean section (classical)	1

Only two patients had recurrent ectopic pregnancies. Three cases had histories of postpartum sepsis several years back. Six other cases presented histories of dilatation and curettement.

After careful study of the histories of the patients with a more or less prolonged period of sterility, we were convinced that some degree of salpingitis existed.

Forty patients gave a history of amenorrhea of six weeks' to two months' duration, followed by a dark, bloody discharge. Twenty patients had a history of irregular menstruation. By irregular menstruation is meant that the menstrual period began at the normal time and continued as a normal period, but instead of stopping, continued as a dark, bloody discharge, containing shreds and lasting for an indefinite period, from a few days to several weeks.

Fourteen cases presented a history of no amenorrhea or irregularity in menstruation except for one day of spotting a week after the normal period.

Pain, which was a constant symptom in all cases, was acute, sharp and paroxysmal. The patients described the pain as sharp, knife-like, cramp-like and pressure-like. Abdominal tenderness was present in all cases over the lower quadrant. In one-third of the cases we found that tenderness was not always confined to the side of the tube involved.

Lower abdominal distension was quite marked in 35 per cent of the cases where there was blood in the pelvis. Bimanual examination revealed, in most instances, a tender mass.

A tender, sensitive cervix was found in all of our cases. Patients cried out in pain when the examining finger came in contact with the cervix. Slight elevation of the cervix also caused great pain.

Twenty patients gave a history of shoulder pain. Pain in the shoulders or between the scapulae is due, presumably, to irritation of the phrenic nerve terminals supplying the diaphragm by extravasated blood in the peritoneal cavity.

Sixteen patients gave a history of fainting and dizziness. All these cases had intra-abdominal bleeding.

The uterus was enlarged moderately in about 60 per cent of the cases. Temperatures in our series varied from 99 to 102 F. Temperature over 100 F. we usually interpreted as due to a peritoneal irritation, absorption of blood or a blood clot resulting from rupture.

Two patients had had previous ectopic pregnancies, one four years previously and the other two years previously; they had had no normal pregnancies.

In this series of ectopic pregnancies, 37 were on the right side and 32 on the left side. The location of the pregnancies in the tube was as follows: in the distal third, 46; in the middle third, 21; in the interstitial portion, 2. Six in which rupture occurred were followed by severe intra-abdominal hemorrhage. Two very early pregnancies in the ampulla of the tube were discovered before rupture, while operating for other conditions.

In 24 of the patients old inflammatory adhesions were found, indicating a previous pelvic inflammation. Six cases were associated with marked retroversion of the uterus. In 39 patients the tube was not ruptured, but in thirty there were hemorrhages from the distal end of the tube, in amounts varying from moderate to considerable hemorrhage. In 7 cases there were organized blood clots in the pelvis, to the side of the tube and behind the uterus, which was encapsulated. These clots were walled off by adhesions of the surrounding viscera, which indicated hemorrhage of long duration, and there was no free bleeding in the peritoneal cavity.

The diagnosis is usually not difficult, if one is ectopic-minded, when examining a woman in the child-bearing period who has had abnormal uterine bleeding following a missed period. In most instances the history of the case, with the findings on pelvic examination, makes the diagnosis fairly certain. Here, as in the diagnosis of other pelvic conditions, the history is of great importance; in many instances at least a tentative diagnosis can be made on the basis of the case history alone, which in the majority of cases will prove correct.

In many cases in which the course deviates from the usual symptoms, the diagnosis may be extremely difficult or impossible until after the operation. Another condition which sometimes renders the diagnosis difficult is the differentiation between old inflammatory processes of the tubes and ovaries, and ectopic pregnancy. Although here the sedimentation test, the leukocyte count and the A-Z or Friedman tests are helpful, they are not always dependable. We have followed for some time a rule which we think is of practical importance. In the presence of a palpable lesion of the tube or ovary, with clinical symptoms of a possible ectopic pregnancy, when in doubt, always operate. This decision has saved us days of anxiety and perhaps the patient's life. Almost invariably the diagnosis of ectopic gestation constitutes a definite indication for immediate surgical intervention.

There were no fatalities in this series, although six patients had serious hemorrhages in which it was necessary to resort to transfusion and other treatments for shock.

Surgical results, particularly in extreme cases, will, of course, bear a definite relation to surgical ability. Results will be measured by the length of time of operation, the surgical trauma and the attempt to do other surgery. As a rule, we did not attempt to do anything more than remove the affected tube, but always examined the other tube to exclude a possibility of a double ectopic.

We did not practice needling of the posterior cul-de-sac except in one instance.

The laboratory findings in 40 cases were as follows: in 75 per cent the white count was 10,000-11,000. The count in 6 was between 20,000-30,000. These high counts were found in all cases with massive interperitoneal hemorrhage. The sedimentation time was determined in 22 patients. In 20 it was normal—18 mm. in 50 minutes. In 2 it was rapid. In those cases we found opposite adnexa was subacutely inflamed during the time of operation.

The Friedman test, which was exclusively employed in 20 cases, was positive in 15 patients and negative in 5. One should remember that occasionally a persistent corpus luteum or corpus luteum cyst may give a positive A-Z test in the absence of a pregnancy.

One of our patients presented a typical history of ectopic pregnancy—tender mass in the left fornix, sensitive cervix, a count of 13,000, a temperature of 101.2 F. and continuous spotting of brownish, dark discharge for a period of two weeks after missing one period. Upon operation we found torsion of a hydatid cyst of Morgagni. (See Tractenberg: *Am. J. Obst. & Gynec.* 31: 162, 1936.)

SUMMARY

A series of 69 extra-uterine pregnancies is presented. Previous pelvic infection was found to be an important etiological factor. Pain of some type was present in all cases and was cramplike in character. Abnormal bleeding was also present in most of our series. Low abdominal distension was complained of in a great majority of cases. Sensitivity and tenderness on motion of the cervix is an extremely significant finding. Fainting and pain in the shoulder blades occurred in 12 per cent of our series.

Most of these ectopic pregnancies occurred in multiparous women. Previous operations (abdominal) play an important role in the etiology of ectopic gestation.

A complete and accurate history is most valuable in arriving at a correct and early diagnosis. Early surgery is the only method of treatment. No other surgery should be attempted in ectopic pregnancy. Transfusion either before, during or after operation should be employed in cases of a serious nature.

RÉSUMÉ

Considerations cliniques et analyse d'une serie de 69 cas de grossesse ectopique

L'auteur presente une serie de cas de grossesse extra-utérines. Il affirme qu'une histoire complete et exacte est de grande valeur pour arriver à un diagnostique correct et précoce. Precedentes operations abdominales autant que precedentes infections pelviques sont des importants facteurs étiologiques. Douleur de gendre different était presente dans tous les cas et avait le caractère de crampe. Anormales saignées venaient notées dans la plupart des cas et basse distension abdominale était presente dans la plus grande partie d' eux. Sensibilité et douleur dans le mouvement du cervix étaient reperts très significatifs. Évanouissement et douleur dans les épaules étaient presents dans 12% des cas. La plupart des grossesses ectopiques étaient dans femmes multipares.

Précoce chirurgie est la seule méthode de traitement et autre chirurgie ne devrait pas être tentée lorsqu'on opère pour grossesse ectopique. Transfusions soit avant que pendant ou après l'operation devraient ètre employées lorsqu'ils sont indiquées.

ZUSAMMENFASSUNG

Klinische Betrachtung und Analyse einer Serie von 69 Fällen Extrauteriner Schwangerschaft

Der Autor stellt eine Serie von 69 Fällen extrauteriner Schwangerschaft vor. Er stellt fest, dass eine vollständige und genaue Krankengeschichte das wertvollste Mittel ist, um zu einer richtigen und frühen Diagnose zu kommen. Sowohl vorausgegangene Bauchoperationen als auch frühere Infektionen im Becken sind wichtige etiologische Faktoren.

Irgendwelche Art von krampfhaften Schmerzen war in allen Fällen vorhanden. Abnormale Blutungen wurden in den meisten Fallen festgestellt, ferner war eine Blähung des Unterleibs meistens vorhanden. Ein ausserordentlich wichtiger Befund war Empfindlichkeit und Schmerzhaftigkeit bei Bewegung der Cervix. Ohnmachtsanfälle und Schmerzen in den Schulterblättern

Editorials

The Cultural and Educational Task of the College

WHEN Theodor Billroth died in Vienna, in 1894, the most important professorships in surgery throughout Europe were occupied by his pupils and former assistants. Outstanding among these were Czerny in Heidelberg, von Mikulicz in Breslau, von Hacker in Innsbruck, Gussenbauer and Wölfler in Prague, Gersuny in Vienna, von Eilselberg in Freiburg, later in Vienna, Kocher in Bern and Privatdozent Narrath in Utrecht.

What greater gift can a man of science make to his profession and to humanity than thus to plant the fruitful seed of his vast experience on fertile soil?

Billroth's personal charm and eloquence as a teacher made Vienna the mecca of postgraduate visitors, who came from all parts of the world to the Second Surgical Clinic in the Allegemeines Krankenhaus. Billroth was not only a master mind, but a pioneer in research on wound infection; and his basic contributions to surgical pathology, above all, his brilliant achievements in major visceral surgery, such as removal of the larynx, the esophagus, the stomach and enterorrhaphies, make him authoritatively cited as the first successfully to accomplish the unattempted.

Billroth was a poet and a musician, and his close friendship with Johannes Brahms gives evidence of his versatility. But more important than all these accomplishments was Billroth's influence on teaching and cultural development. His grasp of the needs of his time and his knowledge of the university curricula made him an authority not only then but now and probably for all time.

He propounded as axiomatic that a successful surgeon should have broad and basic knowledge of general medicine, that self-limiting specialization ignores the fundamentals and defeats its usefulness. The Aesculapians and the Pythagoreans perpetuated their masters in symbol and cult, but could not survive the Hippocratic inquiry and system.

Surgery is at the pinnacle of our time, but scientific and scrupulous surgery demand constant teaching and training. The ethics of a science that deals with life or death demand unrelaxing efficiency, honesty of purpose and deed. More than that, the progress of surgery requires the collaboration of all leading centers of clinical surgery and surgeons of the world.

The admirable study made over a period of years by a competent committee of the American College of Surgeons has given form and life to the organization for the training of Residents in Surgery in specially qualified hospitals for that purpose. Such a period of basic training for young men in surgery is epoch-making for the surgeon of the future. It provides for comprehensive fundamental training and special individual instruction under guidance that it would take many years to obtain by ordinary

Cancer of the Penis

THE status of cancer of the penis as a pathologic entity and its surgical treatment are well established. Radical removal of the entire organ and its surrounding lymphatics gives the most satisfactory results from the standpoint of postoperative duration of cure.

The morbidity rate of penile cancer is not definitely known and varies in different countries. In the United States, on the basis of an extensive study of 43,894 cancers in men, Wolbarst[1] estimated the morbidity as between 2 and 3 per cent of cancers in men. In the Orient it is considerably higher, between 10 and 15 per cent of all cancers in men. He also showed that about 250 men die annually in this country from penile cancer and about 150 in England and Wales.

All of this morbidity and mortality seems to be avoidable. Recent experimental research furnishes ample proof that constant long-standing irritation either predisposes to or actually causes the development of cancer. This is no longer an hypothesis, but a proven fact.

Cancer of the penis offers a fruitful field for the study of cancer prevention. It has been demonstrated beyond a shadow of doubt that penile cancer rarely, if ever, occurs in men who were circumcized in infancy, presumably owing to the greater cleanliness made possible by the removal of the prepuce and its secretions. It does not occur in Jews, who for thousands of years have practiced ritual circumcision on the eighth day of life; and it occurs but rarely in Mohammedans, who also practice ritual circumcision, though much later in life.

The author collected reports of 2,484 cases of penile cancer in uncircumcized Americans, East Indians and Javanese and of 33 cases in Mohammedans. One case was reported in a Jew, but he had not been circumcized in infancy. The author ascribed the occasional occurrence of penile cancer in Mohammedans to the fact that they perform the ritual of circumcision much later than the Jews, that is, between the fourth and ninth year. This interval of some years, when associated with a long and tight foreskin which is not kept clean, permits the development of irritating and infectious factors within the preputial cavity which may constitute the foundation for later development of cancer. In brief, the presence of a chronic balano-posthitis and phimosis with its attendant inflammatory reaction is essential to the development of the cancer. Without these factors, there will be no cancer.

While the principle of cancer prevention by removal of the potential irritating factor is easily applicable to penile cancer, it is interesting to consider whether or not it is possible to apply this principle to other parts of the body which are liable to cancer formation. It has been shown by Sorsby[2] and confirmed by others that Jewish women who observe the ancient Mosaic code enjoy a much lower incidence of cancer of the cervix than do Gentile women; and he ascribed this relative immunity to the insistence of the Mosaic code on sexual hygiene.

In cervical cancer it is within the realm of possibility that the cervix, already traumatized by pregnancy or irritating secretions, or both, may have become secondarily infected by constant exposure to the preputial secretions of the uncircumcized. In the unclean, the invariable existence of a chronic balano-posthitis may harbor the unknown pathogenic factor which is responsible for cancer development.

Disregarding the element of heredity,

The President's Page—United States Chapter

FELLOW MEMBERS:

Following the constructive policies of my distinguished predecessor in office, and heartily endorsing his sound leadership and pathfinding devotion to the best interests of the Chapter and of the College in his twenty-seven months' tenure, I address my first letter to you as President, appreciative of the honor bestowed upon me, but equally aware of the responsibilities of direction and initiative entrusted to me.

I am fortunate, however, in the assurance you have given me of your confidence and full-hearted cooperation in carrying on the good work of the founders and leaders of the College, whose judgment and influence have proved so far-reaching that today, even in the midst of world tragedy, the College is bringing together those abundant resources which united efforts in the interest of science and humanity alone can achieve.

My experiences as President-Elect since February 14, 1940, have enabled me to evaluate the transcending importance of the educational program of the College. Here I may mention my experience with the Executive Council, the promotion of Guild activities and organization of new ones, the appointment and functioning of Boards of Examiners, engaged in diligent and fair investigation, with the goal of selecting applicants endowed with the highest personal, ethical and scientific qualifications, that the intent and purposes of the International College may be fulfilled and safeguarded.

With this as a preamble let me advise you of the inspiring success of the College and Chapter in the past three years, during which time the founders and organizers were threatened with collapse and failure of their efforts, not worth discussing here and better forgotten than recounted, since the underlying sinister motives were brought to light and vanquished.

The Executive Council has striven with untiring fidelity for the expansion and welfare of the College and Chapter, and no personal or collective sacrifice has been omitted when the concensus of the members deemed it necessary.

The academic program and the teaching Guilds receive first consideration in the expansion of all planned activities, and unremitting zeal is shown by the Credential Committees and Boards of Examiners, in the various states throughout the nation, in pointing out to younger men the facilities provided by the College's Credentials, giving opportunity for postgraduate training under the eye of the world's leading surgeons.

The Credential Booklet and Guild plan are no myths or fables, but a practical and invaluable method of contact and teaching, unequaled or unexcelled by any other postgraduate curriculum. It is amazing to observe the increasing popularity of the Guild meetings throughout the country, and much can be expected in this effort in the next few months.

Of special interest to you in this respect should be the announcement of the appointment by the Council of a full-time field representative of the Chapter, to make known personally to the medical profession throughout the country the aims, program and principles by which the International College of Surgeons justifies its existence. His is not an errand of membership solicitation; but by personal contact with medical groups, medical societies, hospital staffs and medical faculties he will give correct, authoritative information concerning this organization and its program for the elevation of surgical training, through the collaboration of the leading surgeons of the world, in full accord and concurrence, not in conflict, with existing educational organizations everywhere.

His mission, ethical and canonical in dignity, represents the governing body of the Chapter, in giving clear exposition of the College's basic plan to help the younger surgeons and those in surgical practice who have need for further training in fundamentals or specialties of surgery. The teaching Guilds, increasing in activity and interest, afford the field representative a wealth of opportunity to popularize the prestige of the Chapter and increase its active membership.

The business organization, one of the many accomplishments of the able preceding administration, bespeaks the sound financial charting and follow-up system which it established. In efficient fashion it provides complete accounting and all needed information Were we to rest upon these laurels, we would show a balanced budget and prove that the financial position of the Chapter is sound. We must and will carry on, for the growth of our institution demands further efforts and manifold activities. It is the firm purpose of the President, guided by the wisdom of the Council members, to maintain a sound economic position at all times while in pursuit of achievement and expansion

The frequent meetings of the Council have demonstrated the growing problems and major complexities of our task, and two days' intensive sessions at the last two convocations seemed insufficient to cope with the agenda Time, personal expense and distances, however, never appear to deter the members of the Council in their faithful devotion to the cause to which they have dedicated themselves.

Our International officers report brightest progress in our Latin-American activities, and while the European conflict is blocking our contact with representatives and colleagues in far-off lands, it is clearly our task to spread the influence of the College here and abroad, so that when the yet uncertain day of world peace returns, we, as a Chapter, may have aided in solidly founding a new era for the future of surgery by the union and cooperation of the world's leading surgeons.

DESIDERIO ROMÁN, M.D., PRESIDENT

Colonel Corbusier Elected President of the Association of Military Surgeons

It is with great interest that members of the International College of Surgeons learn of the election of Colonel Harold Dunbar Corbusier, F.I.C.S., to the presidency of the Association of Military Surgeons of the United States.

Harold D. Corbusier was born in Arizona in 1873 and received the degrees of B.S. and M.D. in 1899 from the University of Michigan. After several years of army service, he settled in 1908 in Plainfield, New Jersey, where he specialized in bone and joint surgery. Besides serving as instructor in orthopedic surgery at the New York Postgraduate Medical School, as chief of orthopedic surgery and physical therapy in the Muhlenberg Hospital, Plainfield, and as consultant for various other hospitals and the Veterans' Bureau, he pursued postgraduate studies in the United States and at Vienna, Paris, London and Liverpool. He was also constantly active in military affairs, joining the National Guard in 1909; he became a first lieutenant in the Medical Reserves in 1911 and a major in 1917, serving on the Mexican border in 1916.

During the World War, Colonel Corbusier organized the Orthopedic Section of the Surgeon General's Office, was a leader in rehabilitation work, served as an instructor at officers' training camps, and held positions in various hospital posts, finally as head of General Hospital No. 178. He is now a colonel of the Reserve Corps inactive.

Since his return to Plainfield and private practice, he has been active in community, professional and military organizations. He has served as vice-president of the New Jersey Medical Society and of the American Medical Association and as president of the New York Physical Therapy Society. He is a member of the Plainfield Medical Society, the Union County Medical Society, the Academy of Physical Medicine and a fellow of the New York Academy of Medicine and the Pan-American Medical College. He is a fellow of the International College of Surgeons. In addition to being the author of numerous articles, he has written a *Handbook for Medical Officers*.

Colonel Harold D. Corbusier, M.D., F.I.C.S., Med. Res., U. S. Army, President of the Association of Military Surgeons of the United States. (Courtesy of the *Military Surgeon*.)

The Sixth International Congress for the Unity of Science will be held at the University of Chicago from September 2 to 6 in connection with the celebration of the fiftieth anniversary of the university. The program will consist mainly of discussion of central and frontier problems in the present state of the unification of scientific knowledge. Those who plan to attend or who wish to receive further notices of the congress are asked to communicate with Professor Charles Morris, University of Chicago.

The *Journal* of the American Medical Association reports that the Second Pan-American Congress for Endocrinology will meet in Montevideo, Uruguay, from March 5 to 8. Papers will be read by Drs. F. C. Koch, Frank P. Hixon, Distinguished Service Professor of Biochemistry at the University of Chicago, Herbert M. Evans, Morris Hertzstein, Professor of Biology and Director of the Institute of Experimental Biology of the University of California, B. A. Houssay, Professor of Physiology in the Medical School of the University of Buenos Aires, and others.

The Association of Military Surgeons of the United States is sponsoring a program on "Medico-Military Preparedness" throughout the country. The idea is to bring to the medical, dental and nursing professions of the country an idea of their responsibilities to the government in these days of unrest, and to correlate civilian practice with that of the Army, the Navy and the Public Health Service. The cooperation of the various state and county societies is being cheerfully given this instructive program, which we hope will be of much benefit in promoting the "all-out" cooperation of the profession in general.

Formation of the Venezuelan Urological Association at a meeting in Caracas was recently announced. Dr. Alfredo Borjas was elected president; Dr. L. Rodriguez, vice-president; and Dr. Leopoldo E. Lopez, secretary. The society is planning the first Venezuelan Congress of Urology to be held in Caracas in May.

The New Jersey Gastroenterological Society at its annual meeting held at Newark, New Jersey, elected the following officers for 1941: Dr. Hyman I. Goldstein, Camden, president; Dr. Harrison R. Wesson, Montclair, vice-president; Dr. Sydney Rosenthal, Newark, secretary-treasurer; delegates to the National Gastroenterological Association, Dr. Sigurd W. Johnsen, Passaic, and Dr. Hyman I. Goldstein, Camden.

An open meeting will be held at the Academy of Medicine, Newark, February 3, 1941. There will be a symposium on "Lesions of the Stomach, Duodenum and Jejunum," participated in by: Dr. William T. Lemmon, Jefferson Medical College; Dr. Isidore Ravdin, University of Pennsylvania; Dr. John H. Garlock, Mt. Sinai Hospital, New York City; Dr. Burrill B. Crohn, Mt. Sinai Hospital; Dr. Charles L. Brown, Temple University; Dr. Karl Kornblum, Jefferson Medical College; Dr. Eugene P. Pendergrass, University of Pennsylvania.

A bust of Hippocrates has been given to the Division of Medical History and Bibliography of the Medical School of the University of California by Dr. Pan S. Codellas and other members of the Greek colony of San Francisco. Formal presentation was made at exercises commemorating the birth of Hippocrates, over which Dean Emeritus Langley Porter presided. Speakers on this occasion were Drs. William Dock and Frederick Reichert, of the School of Medicine of Stanford University, and Drs. William J. Kerr, Chauncey D. Leake, John B. Saunders, Salvatore P. Lucia and Pan S. Codellas, of the School of Medicine of the University of California. The bust has been placed in the Crummer Room, which houses a valuable collection of books and other material on the history of medicine.

The University of California has received a bequest of $1,000,000 under the will of the late Michael J. Connell, Los Angeles banker and philanthropist. While the bequest was made some time ago, no report could be made to the Board of Regents because under terms of the will the property was not available until recently.

Western Reserve University has received two gifts from Commodore Louis D. Beaumont, formerly of Cleveland, now residing in Florida. The first is the sum of $5,000, to be used for general university maintenance; the second, $8,500, is to continue the research on hypertension being carried on by Dr. Harry Goldblatt, Professor and Associate Director of the Institute of Pathology.

Salvador Hospital, Santiago, Chile, dedicated on November 7 a new wing in honor of the late Dr. Harvey Cushing. A full-length portrait of Dr. Cushing was unveiled by United States Ambassador Claude G. Bowers. The president of Chile, the minister of health and other officials were present

It is reported in *Nature* that Dr. G. Roussy, Rector of the University of Paris, formerly Professor of Pathological Anatomy and Dean of the Medical Faculty, and M. Maurice Guyot, General Secretary of the University, have been removed by order of the Vichy Government.

Nature also states that it is announced in *France*, the journal for Free Frenchmen published daily in Great Britain, that Professor P. Langevin, who has just been awarded the Copley Medal of the Royal Society, is now in prison.

Albert Kocher, the son of the famous Theodore Kocher of Bern, has presented the Kocher Hospital to the city of Bern, Switzerland.

On October 31 the fiftieth anniversary of the death of Johann N. v. Nussbaum, the famous German surgeon, was commemorated in Munich, where he practiced for thirty years.

St. George Hospital in Hamburg has opened an addition of 70 beds for cases of open tuberculosis. Ordinarily in peace time there are 18,000 beds available in the Hamburg public hospitals. At the present there are 20,000 available, of which 3,000 are not in use.

The German government, through its representative in Bucharest, has placed at the disposal of the Rumanian Ministry of Education a shipment of German medical books.

Obituaries

Dr. Paul Nicholas Leech, director of the division of drugs, foods and physical chemistry of the American Medical Association, died on January 14 at the age of fifty-one years.

Rear Admiral William Clarence Braisted died on January 17, at the age of seventy-six years. From 1914 to 1921 he was surgeon general of the United States Navy and chief of the Bureau of Medicine and Surgery.

Jacques Arsène d'Arsonval, Professor Emeritus of Experimental Physiology at the Sorbonne, Paris, died on December 31 at the age of 89.

Dr. Charles William Mansell-Moullin, Examiner in Surgery at the Universities of Oxford, Cambridge and Glasgow, and author of works on ulcer of the stomach and on tumors, died in London, November 10, aged 89

GUILD ACTIVITIES

POST GRADUATE STUDY GUILD, UNITED STATES CHAPTER

DIRECTOR
DESIDERIO ROMAN, M.D.
250 South Seventeenth Street
PHILADELPHIA

DIRECTOR EASTERN STATES
GEORGE S. FOSTER, M.D.
925 Chestnut Street
MANCHESTER, N. H.

DIRECTOR WESTERN STATES
CHAS. H. ARNOLD, M.D.
Terminal Building
LINCOLN, NEBRASKA

DIRECTOR NORTHWESTERN STATES
JAMES C. MACGREGOR, M.D.
Medical Arts Building
GREAT FALLS, MONTANA

Indiana Surgical Study Guild

The Indiana Study Guild was organized on January 11, 1939. The following officers were elected: President, Dr. J. Rudolph Yung, Terre Haute; vice-president, Dr. William F Hughes; secretary, Dr. Simon Reisler; treasurer, Dr Carl B. Sputh, all of Indianapolis.

The second meeting of the Guild was held on October 25, 1939, at the Indianapolis Athletic Club. It was agreed that the educational activities be confined to clinical meetings followed by round table discussions Sectional meetings would be arranged when feasible The first clinical meeting was held under the chairmanship of Dr. J Rudolph Yung of Terre Haute. A membership committee to investigate prospective members consisted of Dr. Goethe Link, Indianapolis, chairman; Dr. William F. Hughes and Dr. John W. Emhardt, both of Indianapolis.

The first clinical meeting of the Indiana Study Guild was held at St. Anthony's Hospital, Terre Haute, January 11, 1940, under the auspices of Drs J. Rudolph Yung and John E Dailey. During the morning they performed a number of operations on interesting cases. In the afternoon round table discussions were held, relating to the morning clinic as well as other subjects. Some of the topics discussed were: goiter, led by Dr. J. Rudolph Yung; fibroadenoma uteri, led by Dr. V. A. Lapenta; duodenal stenosis with atrophy, led by Dr. Simon Reisler.

Examinations were conducted by an examining board in Indianapolis and by special examiners in outlying cities.

The Indianapolis group of the Study Guild has decided to meet once each month for the discussion of surgical subjects. The programs are arranged by a committee consisting of Dr Thomas B. Noble, Jr, Dr. John W. Emhardt and Dr. Alan L. Sparks On August 29 the subject of parenteral fluids was presented by Dr. John W. Emhardt. On November 4 war wounds were discussed. At this meeting Dr Thomas B. Noble, Jr, presented a paper, and Col James V. Sparks, of the American Ambulance Corps, just returned from France, discussed transportation of wounded and types of wounds in modern warfare.

Nebraska Guild

The Nebraska Guild will meet in Lincoln on a date to be announced later. The forenoon will be devoted to an operative clinic, the afternoon to a discussion and an analysis of the cases operated upon.

Colorado Guild

A meeting of the Colorado Guild was held at the Vail Hotel in Pueblo on January 2. The Pueblo Fellows of the International College of Surgeons entertained at dinner preceding the meeting, which was opened at 8 P.M., and presided over by Dr. William T. H. Baker.

Dr. M. O. Shivers explained that the objective of the meeting was primarily to organize the Colorado Guild meeting to be held on or about April 26. He announced that Dr. Fred H. Albee, President of the International College, would attend. After some discussion it was voted to hold the meeting in Denver on Monday or Tuesday of the week of April 25. The committee of arrangements consists of Dr. George S. Kent, chairman, assisted by Drs. Gillen, Jaeger, Isbell and Sawyer.

It was decided that the Fellows of Colorado be permitted to invite surgeons for the afternoon session and that the evening meeting be open to members of the Colorado Medical Society. It was suggested that Dr. Albee participate in the program in the evening.

Dr. Shivers read a communication from Dr. James C. Mac Gregor of Montana, who suggested that the Colorado Chapter send a representative to the meeting to be held in Great Falls, Montana. This suggestion was unanimously approved.

Memberships and fellowships were then discussed. The meeting was enthusiastic, resulting in much constructive work. It was adjourned about 10 P.M.

New England Guild

Dr. George S. Foster advises that the following Guild activities are being arranged:

February: A Guild meeting in New Haven, Connecticut.

April: A sectional meeting, in all probability to be held in Boston.

May. A Guild meeting in northern New Hampshire, probably at Berlin.

June: A Guild meeting in the state of Maine.

Dr. Foster also writes that plans are going forward for Guild meetings in the near future in the following states: New York (at Albany, Syracuse, Rochester and Buffalo), Georgia, Florida, Missouri, Mississippi, Louisiana, Oklahoma, Texas and Kentucky.

Southern California Guild

Dr Gallant of Los Angeles reports that the Southern California Postgraduate Study Guild ex [illegible] to hold a meeting in April, the date to be announ [illegible]

Scientific Session of the Montana Surgical Guild

The Montana Surgical Guild meeting was held at Galen, Montana, on December 21, 1940. Dr. Terrill demonstrated *first-stage* thoracoplasty for collapse of a large cavity in the upper lobe of the right lung. This was followed by a second-stage thoracoplasty with complete removal of the third to seventh ribs, as well as the removal of the transverse processes of the articulating vertebrae. Two instruments of his own design were demonstrated by Dr. Terrill.

The removal of a foreign body in the bronchus was demonstrated as well as intrabronchial images at various levels. Of particular interest were the technic of anesthesia and the position of the patient used by Dr. Terrill.

An operation for phrenic nerve paralysis, surface marking with merthiolate, was demonstrated and Dr. Warren Beasley, assistant to Dr. Terrill, subjected thirty patients to a pneumothorax treatment.

The assembly then adjourned to Dr. Terrill's home for an enjoyable social hour. Following dinner, each operation was discussed separately. Dr. C. N. Frederickson of Missoula opened the discussion on thoracoplasty; Dr. F. D. Hurd of Great Falls on bronchoscopy; Dr. J. C. Shields of Butte on phrenic nerve paralysis; and Dr. J. H. Irwin of Great Falls on pneumothorax. General discussions followed, Dr. Terrill closing the discussions.

The business session was called to order by President J. H. Garberson, Miles City, Montana. A vote of thanks was extended to Dr. Terrill and personnel for untiring efforts and hospitality. A brief résumé by Dr MacGregor of the recent progress made by the International College of Surgeons followed. Announcement was made of the next International Assembly to be held in Mexico City in August, 1941.

Dr. F. H. Albee, President of the International body, will be present at the next Montana Guild meeting, to be held April 26, 1941.

Credential and program committees of three each are to be appointed by the president

Philadelphia Guild

The Guild meeting held in Philadelphia on December 19 was also attended by members of the College from New Jersey and Pennsylvania, and by Dr. Hughes, who came from Virginia The morning program was held at the new United States Naval Hospital in Philadelphia, where the naval surgeons presented a number of interesting operative cases. This was followed by a buffet luncheon given by the staff of the Naval Hospital

At an afternoon clinic meeting Dr Román operated for recurring hyperthyroidism and adenoma of the thyroid and showed a case of lingual goiter operated on by him some years ago Dr Roman's clinic was followed by motion pictures and a symposium on modern methods of anesthesia by Dr Ruth of the Anesthesia Staff of Hahnemann Hospital and Dr. Haugen of the Anesthesia Staff of the Presbyterian Hospital.

In the evening, a banquet at the University Club afforded both a social event and an opportunity for discussing the activities of the day in the hospitals, particularly ways and means of increasing the interest in and advantages of future Guild meetings in Philadelphia Dr William Bates acted as chairman for the program of activities dents. We had acceded to popular demand and taken in a large class of boys and girls, 36 in all How far we are going to be able to take them, remains to be seen Our senior class is now doing extra work in order to finish lectures by the end of this term. For the other three classes the outlook is dubious. Some of our teachers are being forced to leave, and other political aspects are doubtful and we may be unable to carry on. We shall if possible.

I was asked recently to do something for an entire community and I want to quote the translation of the letter I received and the answer to it. It is the first time I have had to turn down a request which promised to benefit a number of people.

The Superintendent
St Luke's Hospital No 2

Dear Sir,

We beg to inform you that a notorious bandit by the name of Chen has been brought to your hospital for treatment Chen, age 28, 5½ feet in height, a heroin addict, was at one time connected with the guerillas He has been a great pest to the populace around this part of the country, killing, kidnapping, and doing all sorts of evil.

Because of the bitter hatred of the whole populace we laid hold of him and had his fingers and heels cut and badly wounded. As he is now in your hospital for treatment, it is our unanimous desire to ask you to give him some poisonous drug and end his life, once for all If this can be done, it will be counted as a great favor and a blessing to all the people in this district.

The reply was as follows

Dear Sirs,

A few days ago I received your letter in which you referred to a patient named Chen, as being a very bad person. Chen did come to our hospital for treatment. As our beds were full, he was, however, not admitted.

With reference to your request that we do away with this man, I am sorry to say that it is something impossible for me to do. As you know this hospital is a Christian institution. Our purpose has been the manifestation of the love of Jesus Christ; our work, the relief of the sick from their pain and illness. His life is just as precious to us as that of anybody else. Hoping this letter will meet with your sympathy,

I am, yours,

J. C. M.

God working through many agencies has wonderfully provided funds for the maintenance of this free hospital for sick Chinese. Starting as a refugee hospital with a four months' budget, we begin this month a fourth year. More than 14,000 patients have been treated as free in-patients, who have received 275,000 days of free treatments. The out-patient department has given 240,000 treatments, no patient paying more than 1/10 of a cent. The hospital is always full. War makes trouble for the innocent by-standers, and men, women and children suffer in other ways than from bullets. Undernourishment causes all sorts of diseases. To close a hospital for these destitute people is heartbreaking But the mission ruling that all American women must be evacuated takes away our business manager, Miss Lamberton, and our head nurse, Miss Hurst.

Mrs. McCracken and I had planned to leave for furlough this fall; this emergency confronts us and we are postponing our departure until conditions either improve, or force us out.

After three and a quarter years of war, the Chinese are still unconquered. Just give these people a chance and they will find a way to make a living. A half mile from us there has grown up a squatter village; probably a thousand people live on that small piece of land, in matting sheds as close together as possible. There is always danger of fire in these huts, and a month ago, fire burned out this entire district. The next morning the people were back, poking through the ashes to see what could be salvaged. In a day or so the matsheds were being put up again. During the time that these sheds were being built, the people spent the nights lying out on the ground, covered with newspapers, old rags, burlap sacks or dirty cotton quilts, anything that would keep out some of the cold, the wind and the rain. In this ability to endure and conquer hardship lies the hope of China.

With grateful thanks for the past and with hope for the future,

I am yours faithfully,

J. C. McCracken

Jersey. Introduction by Percival Bailey, M.D., Ph D., Professor of Neurology and Neurosurgery, University of Illinois. Price, $5. Pp. 275, with 94 illustrations. New York and London: Paul B. Hoeber, Inc., 1940.

THIS book contains much valuable information concerning head injuries, which are so prevalent in these days of automobile accidents. The illustrations are well executed A careful study of *this volume should result in the saving of many lives.* We recommend this book highly to the general practitioner.

X. A. M.

Surgery of the Hand (Wound Infections and Closed Traumata). By Marc Iselin, M.D., Surgeon, American Hospital, Paris. Translated by T. M. J. D'Offay, M.B., Ch.M., F.R.C.S., Surgeon and Deputy Medical Superintendent, City General Hospital, Leicester, and Thomas B. Mouat, M.D., Ch M , F.R.C.S , Surgeon, Royal *Infirmary, Sheffield,* Lecturer in Surgery, University of Sheffield Pp 353, with 135 illustrations, including 8 plates. 1940

THIS excellent work is a practical manual for *the treatment of disabilities resulting from* wounds, infections, fractures, dislocations and sprains of the digits and hands. Every phase of traumatic contingency and pathologic entity is covered The author points out that only strict attention to the primary care of wounds will reduce the number of complications, and that a lacerated hand is no minor *matter. The value of immediate skin graft and of placing the hand in the position of function from the* beginning are stressed. The author admonishes against the use of straight splints.

In his experiments Iselin was impressed with a difference between what he considered the middle palmar space and that described by Kanavel. He believes *the space extends to the second metacarpal and not* to the third. He emphasizes the existence of an external intermuscular aponeurosis which separates the midpalmar from the thenar space and passes through the central palmar space.

In spite of its excellence, a few minor criticisms can be made. Figure 70-B, page 214, is somewhat con*fusing. There is somewhat too great emphasis* laid on the use of iodine and too little on the excellent value of soap and water. This reviewer believes that on page 227, under "signs of thenar space infection," the all-important sign of loss of concavity of the first interdigital web should have been mentioned Some may disagree with the author in his insistence on *dry and infrequent dressings* in tenosynovitis.

P. T.

Minor Surgery. By Frederick Christopher, M.D., Assistant Professor of Surgery, Northwestern *University. Fourth Edition Price,* $10. *Pp* 990, with 639 illustrations Philadelphia· W. B. Saunders, 1940.

IN this new edition of a work long highly regarded *by the medical profession, much old material has* been deleted and the text brought up to date. The text is lucid; the illustrations, as a whole, good; the type easy on the eyes. The concluding chapter on hospital technic contains much valuable information for the surgical intern. Although this reviewer agrees with the author's conclusions on the injection treatment of hernia, it is to be feared that he has stirred *up a hornet's nest of discussion. Tumors are too briefly* discussed. There appears a rather paradoxical statement on the treatment of pigmented moles. Farther on the author quotes Lee to the effect that "the only way to achieve better results is to urge physicians to recommend prophylactic excision of all pigmented areas that are exposed to trauma or irritation"

K.

The New International Clinics. By George Morris Piersol, M.D. Vol. I, New Series 3. Price, $3. Pp. 319, with 31 illustrations Philadelphia: J. B. Lippincott, 1940.

THIS new issue of "Clinics" is in keeping with the high *quality of its predecessors. The treat*ment of angina pectoris, the use of sulfapyridine in pneumococcal, streptococcal and staphylococcal infections, the use of vitamin K in pseudohemophilia hepatica of childhood are presented in a most interesting manner. The volume takes in a great many subjects and is well rounded. The closing chapter on vitamins is highly *informative.*

O. R.

***Holt's Diseases of Infancy and Childhood: A text*-book** for the use of students and practitioners. By the late L. Emmett Holt, M.D., and John Howland, M.D Revised by L. Emmett Holt, Jr., M.D., Associate Professor of Pediatrics, Johns Hopkins University, Baltimore, and Rustin Mc-*Intosh,* M D., *Carpentier Professor of Pediatrics,* Columbia University, New York. Eleventh edition Price, $10. Pp. 1421, with 262 illustrations. New York, London: D. Appleton-Century Company, Inc., 1940.

THE eleventh edition of this, one of the best known textbooks on pediatrics, is the most excellent text, in my opinion, for the pediatrician. In this new edition the authors have successfully combined the advantages of single and multiple authorships by inviting the collaboration rather than the independent contribution of a number of well-known specialists in pediatrics. The result is, I believe, a modern text on pediatrics which has no equal, at least in the English language.

In keeping abreast of the many recent advances in all fields of pediatrics, the authors have made extensive changes in this edition. Some parts have been en*tirely rewritten, others have been brought up to the* minute and some entirely new parts have been added. Among the new topics may be mentioned glycogen disease, lipodystrophy, adrenal insufficiency, osteopetrosis, petrositis, erythroblastosis fetalis and cystic fibrosis of the pancreas. The entire subject is presented clearly and simply, making it indeed a pleasure to read the *wealth of material gathered in the more than 1,400* pages of the book.

M. G.

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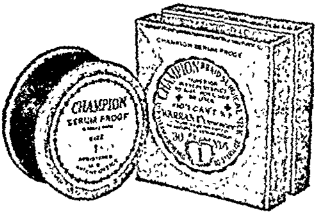

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PROSTIGMIN PREVENTS ABDOMINAL DISTENTION AND URINARY RETENTION

The Journal of the
International College of Surgeons

Volume IV AUGUST 1941 *Number* 4

A New Vitallium Cup for Arthroplasty of the Hip

FRED H. ALBEE, M.D., F.A.C.S., F.I.C.S., AND ROBERT L. PRESTON, M.D.
NEW YORK CITY

ARTHROPLASTY of the hip with the interposition of an autogenous membrane of fat and fascia lata has been proved, by years of experience, to be a trustworthy operation for the correction of bony ankylosis.

It is the opinion of the authors that, notwithstanding the proved value of the recently introduced cobalt-chromium alloy molds for arthroplasty of nonankylosed hips, an autogenous graft of fat and fascia lata is still to be preferred in cases of complete bony ankylosis.

Despite the fact that vitallium is practically *indestructible, absolutely compatible* with living tissues and resistant to body fluids, it nevertheless cannot resist an onslaught of infection as can the living graft. In the experience of the authors, on several occasions a low-grade local infection has occurred at one angle of the operative field, even involving a portion of the fascia, but the resistance of the living tissue, plus the immediate adherence of the graft to the host tissue, prevented and blocked the extension of the infection to other parts of the newly made joint. Thus the ultimate outcome of the operation was not seriously impaired or retarded. This property gives the autogenous membranes definite advantages over any type of nonautogenous foreign body molds.

INTRODUCTION OF THE VITALLIUM CUP

However, there are a large group of cases in which bony ankylosis has not occurred.

shortening of the kinesiologic hip lever.[3] If at operation this kinesiologic lever is found to be inadequate, it should be lengthened either then or at a later operation.

In a case recently observed, where the vitallium cup was placed in the hip, there was a subsequent dislocation of the hip because of the shortness of the lever at the top of the femur.

In the cases in which it is felt that stability cannot be secured because of the psychological reaction of the patient, and if contraindications are not present, arthrodesis should be done according to the technic described by Albee[4] in 1908.

Arthrodesis cannot be done if the other hip is ankylosed or badly damaged with arthritis, or if the mobility of the lumbar spine is impaired by arthritis. If arthrodesis is performed under these conditions, the arthritis in the opposite hip and the lumbar spine may be increased so much as to leave the patient badly disabled.

These considerations, therefore, make arthroplasty with the interposition of a vitallium mold the procedure of choice in all hips having markedly limited motion but not bony ankylosis, in which postoperative stability can be obtained by proper development of the muscle-lever mechanism at the top of the femur.

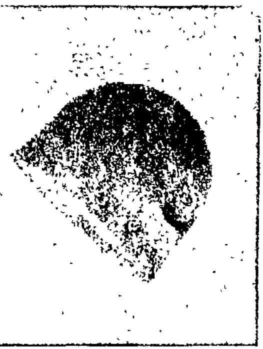

Fig. 4 X-ray taken during pull, with patient reclining on the table.

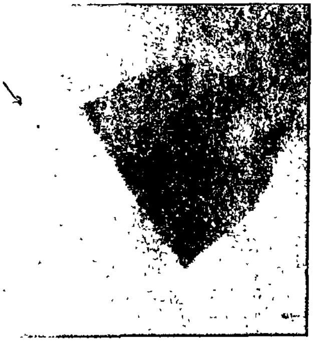

Fig. 5. The limb was pushed upward while this X-ray was being taken It should be noted that there is a rotation upward of the cup and a displacement of the new head of the femur from it. There is also a large mass of bone forming from the upper portion of the rim of the acetabulum down over the mold.

WEAKNESSES OF THE CUP

The relatively small experience of the authors in the employment of the vitallium cup has disclosed two weaknesses in the design of the mold previously used. That is, by virtue of the contour of the mold, there is no particular inhibitory influence against the extension outward from the site of the previous attachment of the capsule at the rim of the acetabulum of new-formed bone, or osteophytes (see Figs. 2 and 3, arrows); this may bring about either a return of ankylosis with the cup incorporated beneath or a bone blockage to free motion. (See Fig. 1, the same case as Fig. 2 before operation.) This has occurred in an uncomfortably large percentage of cases.

The second untoward effect has resulted from the cup's acting precisely like a ten-quart pail with a rounded bottom sitting on the floor; when pressure is brought to bear upon its edges, it immediately [illegible] tips over. That is precisely [illegible]

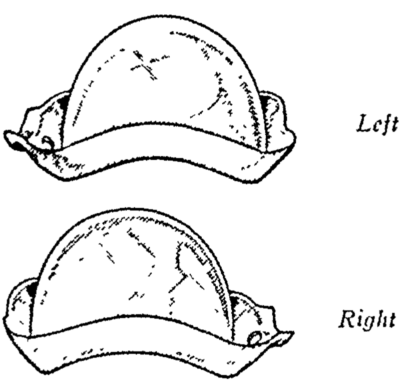

Fig. 6. Drawing of the new cup, demonstrating the fact that the cup is made from a mold of a normal acetabulum. The flanges fit about the rim and prevent instability of the cup and the proliferation of newly formed bone, or osteophytes, from the acetabular rim.

Fig. 7. X-ray of case of advanced osteoarthritis of the right hip before operation. The left hip was fused by the senior author eighteen years before.

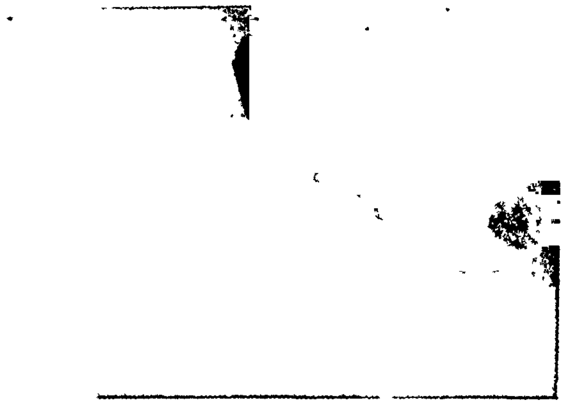

Fig. 8. Same case as Fig. 7 six months after operation, showing the flanged cup in place. It should be noted that as far as the authors could determine, this cup is at the same relative depth as the normal acetabulum.

to the cup in the hip when there is an undue amount of laxity of the abduction weight-bearing muscles of the hip from some cause or other, usually a too-short kinesiologic lever.

Such has been the unhappy experience of one patient who has recently come under the observation of the author. After two years and two months she is still unable to walk because on the slightest weight-bearing, there is a severe jump and click at the hip, accompanied by acute pain. This is produced by the new-formed head of the femur as it displaces upward and beyond the cup, which tips over or upward (see Figs. 4 and 5). While the roentgenogram reproduced in Figure 4 was being taken, a gentle manual pull was exerted on the foot; while that in Figure 5 was being taken, a pushing upward force was made. It is noted that in Figure 5, the cup has tipped and the new femoral head has become dislocated.

AN IMPROVED VITALLIUM CUP

The authors have, therefore, a two-fold purpose in presenting this paper. First, they wish to offer a modification in contour of the Hopkins-Smith-Peterson-Venable cup. This modification is shown in Figure 6.

Secondly, the authors wish to suggest new models of reamers to facilitate in the insertion of the cup.

It should be noted that the contour of this cup has been molded to conform to the rim of a normal acetabulum, and the flanges are adapted to fit completely over the rim of the acetabulum. The contour of the flange and a bolt which fixes the flanges to the region of the anterior-inferior spine of the ilium firmly anchor the cup, so that there is no possibility of its displacement or capsizement. These same flanges also completely inhibit the possibility of a sleeve of bone, or osteophytes, growing outward and downward from the rim of the acetabulum over the neck of the femur, in that way producing a reankylosis or a bone blockage (see Figs. 2 and 3). These cups have been made in three sizes, in accordance with the various sizes of the acetabulum.

The removal of excess bone in malum coxae senilis—in the experience of the authors the most frequent operation in which this type of arthroplasty is performed—is unusually difficult because the enormous outgrowths of bone from the rim of the acetabulum and the head of the femur make it impossible to dislocate the head until most of this excess bone has been removed. In several cases the authors have found it difficult to secure enough laxity easily to shape up the new-formed head. For this reason the reamers were designed with removable handles so that the cup portion of the reamer could be inserted into the hip joint and the handle clamped on at any place around the periphery. This permits the accurate shaping of the head and acetabulum after a very small amount of laxity has been secured.

The authors offer this report merely as a preliminary not a final one, for sufficient time has not elapsed nor have a sufficient number of cases been treated to form the basis for conclusive opinion on the subject.

SUMMARY

The use of the vitallium cup in arthroplasty of the hip has now progressed beyond the experimental stage, being the treatment of choice in all hips having a markedly limited motion but not bony ankylosis. To correct two weaknesses in the ordinary vitallium cup, the authors describe and illustrate two modifications, one an improvement in contour, the second a new type of reamer, to facilitate insertion of the cup.

REFERENCES

1 Hopkins, Heywood H., and Zuck Frederick N.: Arthroplasty of the Hip with Use of the Vitallium Cup, M. Bull. Vet. Admin., vol 15, no 1 (July), 1938.

2 Smith-Peterson, M N Arthroplasty of the Hip: A New Method, J Bone & Joint Surg, vol. 21 (April), 1939.

3 Albee, Fred H The Kinesiological Lever in Reconstruction Operations on the Hip, J. Bone & Joint Surg, vol. 22, no. 2 (April), 1941.

4. Albee, Fred H.· A New Method for Osteoarthritis of the Hip, J.A.M.A., 1908.

(Acknowledgment is made to the Austenal Laboratories, Inc., 34 W. Thirty-Third Street, New York City.)

RÉSUMÉ

Une nouvelle coupe de vitallium pour arthroplastie de la hanche

L'usage de la coupe de vitallium dans l'arthroplastie de la hanche a progressé maintenant au délà de l'étage expérimental, étant le traitement de choix dans tous les cas avec une grande limitation des mouvements mais pas d'anchilose des os. Les auteurs décrivent et illustrent deux modifications pour corriger deux faiblesses dans l'ordinaire coupe de vitallium, une consiste en un améliorement du contour, l'autre dans un nouveau type d'appareil pour faciliter l'insertion de la coupe.

ZUSAMMENFASSUNG

Die Anwendung der neuen Vitalliumschale bei Hüftgelenksplastik

Die Verwendung der neuen Vitalliumschale für Hüftgelenksplastik, ist bereits über das experimentelle Stadium hinaus fortgeschritten und ist das Mittel der Wahl bei Hüften deren Beweglichkeit bedeutend eingeschränkt ist, und die jedoch keine knochige Ankylose aufweisen. Um zwei Schwächen der gewöhnlichen Vitalliumschale zu verbessern, werden zwei Modifikationen vom Autor beschrieben um die Einsetzung der Schale zu erleichtern, die eine eine Verbesserung des Umrisses, die zweite eine neue Art von Reibahle.

SUMARIO

Neuva cápsula de Vitallium para la artroplastía de la cadera

El uso de la cápsula de Vitallium en la artroplastía de la cadera ha pasado de la etapa experimental, siendo el tratamiento escogido para todas las caderas con movimiento marcadamente limitado, pero sin anquilosis del [illegible] ara [illegible] dos

puntos débiles de la cápsula de Vitallium ordinaria, los autores describen e ilustran dos modificaciones, una en el contorno y la otra un nuevo tipo de anillo, para facilitar la inserción de la cápsula.

RIASSUNTO

Una nuova coppa di vitallio

L'uso della coppa di vitallio nell'artroplastica dell'anca ha progredito ora al di là dello stadio sperimentale, essendo il trattamento di scelta in tutti i casi con netta limitazione dei movimenti ma non anchilosi ossea.

Gli Aa. descrivono e illustrano due modificazioni per correggere due difetti nell'ordinaria coppa di vitallio, una consiste in un miglioramento del contorno, la seconda in un nuovo tipo di apparecchio per facilitare l'inserzione della coppa.

Two Cases of Genital Malformations

ABSENCE OF CERVIX AND ATRESIA OF VAGINA; HEMATOMETRA AND HEMATOCOLPOS

ENRIQUE LOUP B., M.D., F.A.C.S., F.I.C.S.*
LA PAZ, BOLIVIA

EMBRYOLOGICALLY, as we know, the uterus and vagina develop from the union of the Müllerian ducts. The insertion of the ligamentum inguinale, the future round ligament, into the urogenital cord distinguishes two segments in the Müllerian ducts. One, situated above, running along the wolffian body and remaining ununited, will constitute the fallopian tubes. The other, situated below, running toward the middle line, will fuse with that of the opposite side to form a single medial canal, the uterovaginal canal, the lower part of which ends blindly in an eminence of the posterior wall of the urogenital sinus.

At the beginning of the fourth month of intrauterine life, when the fusion of the Mullerian ducts has been completed and the intervening septum has disappeared, important modifications also begin to make their appearance in the epithelium which lines the genital canal. This soon changes its structure from polyedric stratified to high prismatic in the upper part; lengthening out, this will cover the lumen of the fallopian tubes. In the lower part, the future vagina, the epithelial layer is of the pavement type.

By the end of the fourth month of intrauterine life, as the uterovaginal canal becomes longer and flatter in its vaginal portion, its opposite epithelial walls approach each other, fusing from below upward, with the resulting formation of the so-called epithelial lame of the vagina, which entirely occludes the space between the walls. The cells that constitute this epithelial lame begin to proliferate in an active manner, resulting in the increase of the canal on both sides, longitudinally as well as transversely.

This longitudinal growth gives rise to two important formations at the ends of the lame. In the upper part, just at the point where the epithelial layer varies in structure from low pavement to high cylindric, it begins to emit a domelike growth which penetrates into the thickness of the genital cord, outlining the uterine cervix and the vaginal fornices (Fig. 1). The narrowed lower end of the vaginal canal is directed toward the vestibulum vaginae, to which it is united by an eminence of cells that will constitute the hymen, lined by a layer of the vestibular epithelium.

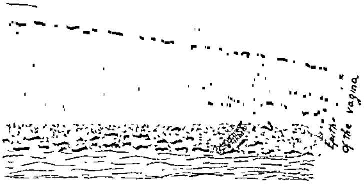

Fig. 1. Sagittal section of the cervix uteri in a human fetus, showing the dome-like growth of the epithelial lame of the vagina, outlining the constitution of the uterine cervix. (From Tourneux.)

That is to say, the hymen "is no other thing than the anterior end of the vagina, lined out by the vulvar mucosa" (Budin), and the same embryologic element, the epithelial lame of the vagina, gives rise to two different formations, the uterine cervix at its upper end and the hymen at its lower end. The uterine cervix is formed first;

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*Surgeon at the Hospital General.

ymen at the end of the fifth month.
e of fusion or arrested development
s embryologic formation accounts for
resia of all or any part of the vagina,
r absence of the cervix, with or with-

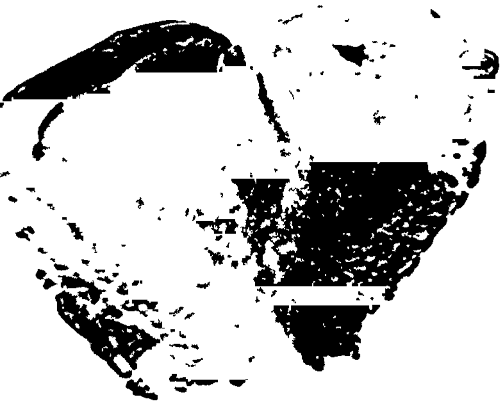

Fig. 2. Case 1. Section of uterus with hematometra from congenital absence of the cervix and the lower portion of the vagina. Note the trees of life. This specimen appears smaller than it actually was, owing to contraction from formalin.

out involvement of the hymen.

This assumption seems in full accord with the clinical findings which we are about to report. In both our cases of congenital anomalies we found absence of the cervix and fornices, associated with atresia of the lower portion of the vagina and, on the other hand, with normal development of the hymen. In other words, vaginal atresia and absence of the cervix may coexist with a normal development of the hymen and the external genitalia. From the clinical standpoint this means that a normal-appearing hymen does not obviate the necessity for keeping in mind a possible anomalous condition in the vagina and uterus.

abdominal cramps, but did disclose the important fact that she had never menstruated.

Upon physical examination we found a large, firm, tender tumor that reached the costal margin of the left side, crossing a little way over the midline. The mass undoubtedly being pelvic in origin, gynecologic examination was performed. The pubis was not cov-

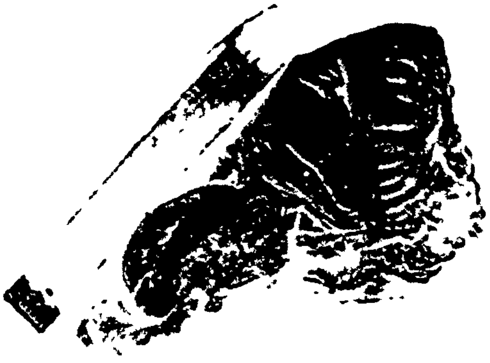

Fig. 3. Case 1. Lateral view of the specimen showing enlarged adnexa.

ered with hair; however this is characteristic of the Indian race. The patient's labia majora and labia minora were well developed for her age. The hymen showed two tears, and the girl confessed she had been subject to an attempt at coitus.

The most striking finding was that above the hymen the exploring finger was stopped by a firm wall. *There was no vagina.*

Rectoabdominal examination revealed that the abdominal mass continued downward, creating a bulge in the upper third of the anterior wall of the rectum. This then was suddenly interrupted at this level. This proved the absence of a vagina at least in its lower portion. It was somewhat difficult to pass a catheter into the bladder.

General conditions were satisfactory; temperature was 37.8 C., pulse rate 90. The patient was a well-developed and well-nourished girl, showing only a bad implantation of the upper central incisors. There were no congenital anomalies in her family.

A preoperative diagnosis of hematometra was made at once.

First Operation.—On Jul. 4 drainage was decided upon as a first stage in the treatment. Through a transverse incision, a sharp dissection 4½ cm. long was made between urethra and rectum, until the mass was reached. There were released 800 to 900 cc. of a thick, tarry, odorless fluid. Naturally, the enormous mass decreased as the flow of liquid increased. Soon after, the tumor was confined solely to the pelvis.

The vaginal canal, very narrow, was lined with [illegible] its upper portion, where an outlet connected [illegible] uterine cavity. *There was* [illegible] was [illegible] more complex anomalies might be present, and since, moreover, the absence of a cervix meant an open pathway by which infection could enter the peritoneal cavity, a laparotomy was decided upon.

Second Operation.—This was performed July 11. Spinal anesthesia was given (0.12 centigrams novocain). When the peritoneum was opened, a small amount of an adherent chocolate-colored material was found. This was surrounded by fresh adhesions of the omentum, occupying the area mapped out as the site of the tumor mass. This finding seemed to demonstrate the fact that the fluid contained within the uterus found an outlet into the peritoneal cavity through the fimbriated end of the fallopian tube.

The uterus, about twice normal size, was displaced to the left. The ovaries were enlarged, especially the left one, which was a thick, sclerosed, dark-colored shell. The right ovary showed signs of the last ripeness of the graafian follicle; the tubes were enlarged and moderately dilated The round ligaments, very atrophic, were reduced to thin folds of the broad ligament. The uterine arteries, especially the left, were very thin. Another branch of the hypogastric artery, accompanied by two veins, entered the uterus at a point just between the uterosacral ligaments and the normal site of the uterine artery.

Hysterectomy and left salpingo-oophorectomy were performed Upon section of the vagina, we verified its narrowness, which scarcely admitted one finger. The specimen (Fig 2) consisted of an enlarged uterus with dilated cavity and thickened walls. But the most important confirmation was the absence of the cervix, the vagina being a continuation of the uterus, with thinner walls. The section showed the trees of life characteristic of the cervical canal

To correct the vaginal atresia, we lined with mucous membrane the canal previously made between urethra and rectum. This was done by cutting two flaps from the hymenal and vestibular mucosa, fastening them by a few interrupted sutures to the anterior and posterior walls When the wound was healed, progressive dilatations were made.

Convalescence was uneventful On July 28 the patient was discharged. By this time the vagina was completely lined with mucosa, and easily admitted two fingers, though in the superior portion, near the uterine outlet, it became somewhat narrower. That is to say, the reconstructed portion was more ample than the existing one When the patient was seen one and one-half years later, her vagina easily admitted a speculum of medium size.

CASE 2.—M. U , an Indian girl 14 years old, was sent to my service in the Hospital General on June 8, 1939, with the presumptive diagnosis of "ovarian cyst" She complained of persistent pain in the lower abdomen. The pain was frequent and became much more severe when she was standing. Four months before admission, she had suffered a kick in the left side of the abdomen. Since that time she stated that she had noticed a tumor at that site, accompanied by pain During the month previous to the admission these symptoms had become much more troublesome

Her past history revealed that she *had never menstruated*, even though she was 14 years old Her mother stated that her own menses were also very late, and that another daughter had menstruated at the age of 18 or 19 years.

Physical Examination—The patient was a well-developed girl The abdomen was soft and not distended. In the left lower quadrant there was a pyriform, smooth, firm tumor It was freely movable; indeed could be moved from the left to the right iliac fossa without causing discomfort. Rectoabdominal examination revealed a diffuse, tender cystic mass bulging into the anterior wall of the rectum and spreading upward until it reached the tumor previously mentioned. At the abdominal area, just over the site occupied by the mass, percussion revealed dullness and the so-called "hydatic thrill." External genitalia showed nothing abnormal. The pubis was naked, which was not rare, considering her race and her age Labia majora and minora were well developed. the hymen was annular. But beyond the introitus, at the site of the vagina, there was a pit of 2½ cm., above which the exploring finger was arrested by a raw structure and a medial bridle.

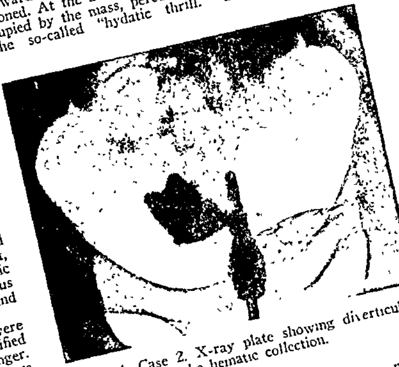

Fig. 4. Case 2. X-ray plate showing diverticulum dissected out by the hematic collection.

Undoubtedly this was a case of vaginal atresia, and the referred mass could be nothing other than the retained products of menstruation. The hydatic thrill, so-called because considered pathognomonic of the hydatic cyst and attributable to the shock of the vesicles against each other, was found in this case just as in other cases of ovarian cysts containing large amounts of mucus. This phenomenon, I believe, can be explained as due to the waves produced by the percussion through the liquid mass.

The tumor, very firm, freely movable, and lying above the pelvic mass, was perhaps a pediculated ovarian cyst Questioned as to the monthly attacks of pain so much emphasized by almost all authors, the patient's answer was negative

First Operation.—On June 9, 1939, the patient was operated upon under general anesthesia. By sharp dissection between urethra and rectum, the mass was reached at about 3 cm. above the hymen. The tarry blood characteristic of the retained products of menstruation began to flow slowly. As soon as about 400 cc of this fluid was drained off, the pelvic mass began to disappear. The pyriform body descended slowly into the pelvis, this was the uterus The vaginal canal, very short, was directed upward, entering the uterine cavity by a transverse opening *The cervix was absent.* The marginal circumference of the vaginal cylinder found at 3 cm. above the introitus was dissected in sufficient extension to be brought down toward the hymen, to which it was sutured by interrupted stitches of fine catgut. A rubber tube was left in the vaginal canal.

The postoperative course was uneventful. As the absence of a cervix would have made it easy for infection to reach the peritoneal cavity through the uterus and the tubes, a laparotomy was decided upon.

Second Operation.—This was performed June 13, 1939, under spinal anesthesia. The abdomen was opened through a median incision. The uterus was found to be normal in size and form; the tubes were patent; the ovaries were rather small; the fallopian tubes were ligated. A normal-appearing appendix was removed. No further surgery seemed advisable, and the abdomen was closed in the usual manner.

The patient made a good convalescence. On the seventh postoperative day, there was still some discharge of tarry fluid through the vagina. This was strange, since we had seen that the uterus was not enlarged and its cavity certainly did not contain any more fluid. Previous to an injection of iodized oil, a roentgen gram was taken (Fig. 4). This showed a sort of diverticulum dissected out by the hematic collection, from which the leakage probably occurred.

The patient was discharged on July 13, 1939. At that time the vagina, which was entirely covered with mucosa, admitted one finger; its length was $3\frac{1}{2}$ cm. Menstruation did not appear during hospitalization.

SUMMARY

Two cases are reported of Indian girls, fourteen and fifteen years old, with hematometra and partial hematocolpos resulting from congenital atresia of the vagina. In both cases the cervix was absent, while the hymen was normally developed; neither had ever menstruated. Clinically, the only symptoms were pains in the pelvis and lower abdomen and increasingly large cystic masses in the pelvis.

Operative treatment was vaginal drainage, followed by abdominal exploration. For partial restoration of the vagina, the canal was covered with vestibular and hymenal mucosa, fixed to the marginal circumference of the existing vagina. Results were satisfactory, especially in the first case, in which the restored vagina easily admitted a medium-size speculum.

RÉSUMÉ

Malformation congenitale: absence du cou utérin et atrésie de la vagine; hématomètre et hématocolpos

Deux cas de jeunes filles indiennes de 14 et 15 ans avec hématomètre et hématocolpos partiel qui résultait en atrésie congenitale de la vagine sont rapportés. Dans les deux cas le cou était absent, tandis que l'hymène était développé regulièrement; ni l'une ne l'autre était menstruée. Cliniquement les seuls signes étaient douleur dans le bassin et dans les bas abdomen et des masses cystiques qui tendaient à croître dans le bassin. Le traitment opératif consista en drainage vaginal suivi par exploration abdominale. Pour réparer partialement la vagine, le canal fut couvert avec la mucose vestibulaire et hymenéale, fixée à la circonference marginale de la vagine existente. Les résultats furent satisfaisants, surtout dans le premier cas dans le quel la vagine restorée laissait entrer facilement un speculum de calibre moyen.

ZUSAMMENFASSUNG

Angeborene Missbildung: Fehlen der Cervix und Atresie der Vagina; Hematometra und Hematocolpos

Es werden zwei Falle von Indianer Madchen, im Alter von vierzehn und funfzehn Jahren, mit Hematometra und partieller Hematocolpos durch angeborene Atresie der Vagina, beschrieben. In beiden Fallen fehlte die Cervix, wahrend das Hymen normal entwickelt war, keine von beiden hatte je menstruiert. Die einzigen klinischen Symptome waren Schmerzen im Becken und Unterleib und an Grosse zunehmende Massen im Becken.

Der Operative Eingriff war vaginale Drainage mit folgender abdomineller Exploration. Zur teilweisen Wiederherstellung der Vagina, wurde der Kanal mit vestibularer und Hymenaler Mucosa uberzogen, welche an die marginale Umrandung der vorhandenen Vagina befestigt wurde. Die Re-

sultate waren befriedigend, besonders in dem ersten Fall, in welchem die wiederhergestellte Vagina ein mittelgrosses Speculum leicht einliess.

SUMARIO

Deformación congénita: ausencia de la cervix y atresía vaginal; hematometra y hematocolpos

Se citan dos casos de muchachas de la India, de catorce y quince años de edad, con hematometra y hematocolpos parcial, resultantes de una atresía congénita de la vagina. En ambos casos la cervix faltaba, en tanto que el himen se hallaba normalmente desarrollado; ninguna de las dos muchachas había menstruado. Clínicamente los únicos síntomas eran dolores en la pelvis y en el bajo vientre y desarrollo de quistes.

El tratamiento operatorio consistió en canalización vaginal seguida de exploración abdominal. Para restaurar parcialmente la vagina, se cubrió el canal con mucosa del himen y del vestíbulo, fijada a la circunferencia marginal de la vagina existente. Se anotaron resultados satisfactorios especialmente en el primer caso, en el cual la vagina restaurada, facilmente admitía un espejo de tamaño mediano.

RIASSUNTO

Malformazione congenita: assenza del collo uterino e atresia della vagina; ematometrio ed ematocolpo

Sono riportati due casi di ragazze indiane di 14 e 15 anni, con ematometrio ed ematocolpo parziale risultante da atresia congenita della vagina. In ambedue i casi il collo era assente, mentre l'imene era sviluppato regolarmente; nessuna delle due era mestruata. Clinicamente gli unici segni erano dolore nella pelvi e nel basso addome e masse cistiche tendenti ad allargarsi nella pelvi. Il trattamento operativo consistette in drenaggio vaginale seguito da esplorazione addominale. Per riparare parzialmente la vagina, il canale fu coperto con mucosa vestibolare e imeneale, fissata alla circonferenza marginale della vagina esistente. I risultati furono soddisfacenti, specie nel primo caso in cui la vagina ristorata ammetteva facilmente uno speculo di medio calibro.

A History of Gastroenterology

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ONE of the lessons learned from the history of any branch of science, and medicine is no exception, is that each age steps up upon the shoulders of the age which has gone before it. Thus the value of any age lies not solely within itself, but as a sustaining link in the unbroken chain binding preceding ages to future ones.

All branches of science, and gastroenterology is no exception, are constructed like any edifice built by man. Instead of bricks laid one upon the other, in the end forming an awe-inspiring, completed structure, the temple of any science is built of facts. This temple, however, is never completed. Always there is more and new material to be added.

No attempt will be made to identify each and every brick in the gastroenterological structure. Here and there pieces which have excited our interest or aroused our curiosity will be mentioned.

PREHISTORIC TIMES

A start will be made with the prehistoric time when man first appeared as a living creature upon this earth. As a living, active aggregation of human tissue, his body required fuel to generate the heat necessary that this aggregation of cells might continue to live. His blood required a definite concentration of sugar, his muscles a definite amount of protein product, his liver to produce glycogen. His biggest problem was "how to live," his next "how to live comfortably."

At this stage of his existence he was a savage and possessed only of pure animal instincts. He killed the animals about him and ate their meat raw, thereby furnishing protein and fats to his body. He found fruits and vegetables growing about him to furnish carbohydrate and sugar for his blood. Here is where he first came up against a gastrointestinal problem. He needed to learn selectivity, and this he proceeded to do by experience in the school of trial and error.

He learned that eating certain berries caused violent pains in his abdomen; that certain grasses and vegetables caused violent purging, while others caused a rather pleasant catharsis. Slowly he tabulated these experiences in his brain and in due time, by word of mouth, passed this information on to his brothers. They in turn exchanged their experiences with him, so that in time he became in a small way not only a dietary expert but a walking materia medica.

This process of assimilation went on through those great geological transformations which it took ages to accomplish, during which his environment was changed and he changed himself to adapt to the environment.

Gastroenterologically, he learned that the root of the ginseng plant, if steeped in water, made an excellent stomachic. Sarsaparilla and sassafras root similarly steeped whetted his appetite and made him feel good. Camomile, sage, dandelion and rhubarb he found to be most excellent mild laxatives and pleasant to take when his liver was out of sorts. When he was bilious he found that parsley seemed to help.

The waters of certain springs he learned had either laxative or tonic properties. Indeed some types of earth itself he found useful in diarrheas, and he searched diligently for a supply for himself. This may have been either bismuth-containing earth or pure kaolin.

He found that decoctions of hemlock bark produced violent illness, even death, and he stored this knowledge away to use at some appropriate time. Such facts constituted the gastrointestinal knowledge of primitive man.

EARLY CIVILIZATIONS

After hundreds and thousands of unrecorded years, the great Egyptian, Persian and Arabian civilizations give some information as to the advances in knowledge made by man. At first whatever one man learned was available only in immediately adjacent territory, with which he came into direct contact. Later it was carried out into the world by travelers and roving traders, and converted into some more common language by someone capable of the task.

In spite of material evidence that these brilliant civilizations contributed notably to science, specific knowledge as to what and how is sadly deficient. Many existing papyri testify, though in a limited way, to the medical practice and custom of the times. Perhaps the most famous, at any rate the most publicized, is the Ebers' Papyrus. According to authorities, it was written sometime about 1550 B.C. and is of unknown authorship. It lay hidden for 3,500 years in a most ingenious place; during excavations in Thebes in 1858 it was found reposing between the thighs and under the scrotum of an Egyptian mummy. It was purchased by a professor named Ebers from Leipzig, and carries his name, although he devoted a great deal of time trying to dispose of it to the various museums of the world. It is of interest to us only because it is supposed to carry the earliest description of cancer of the stomach. Intestinal parasites are described, and their remedies. There is also a detailed description of liver complaints but no therapy is recommended.

In archeological ruins of ancient Egypt one sees delineated the daily life of the times, the gathering of fruits and grains, the kneading of dough, fish being caught by means of nets, but little pertaining to illness.

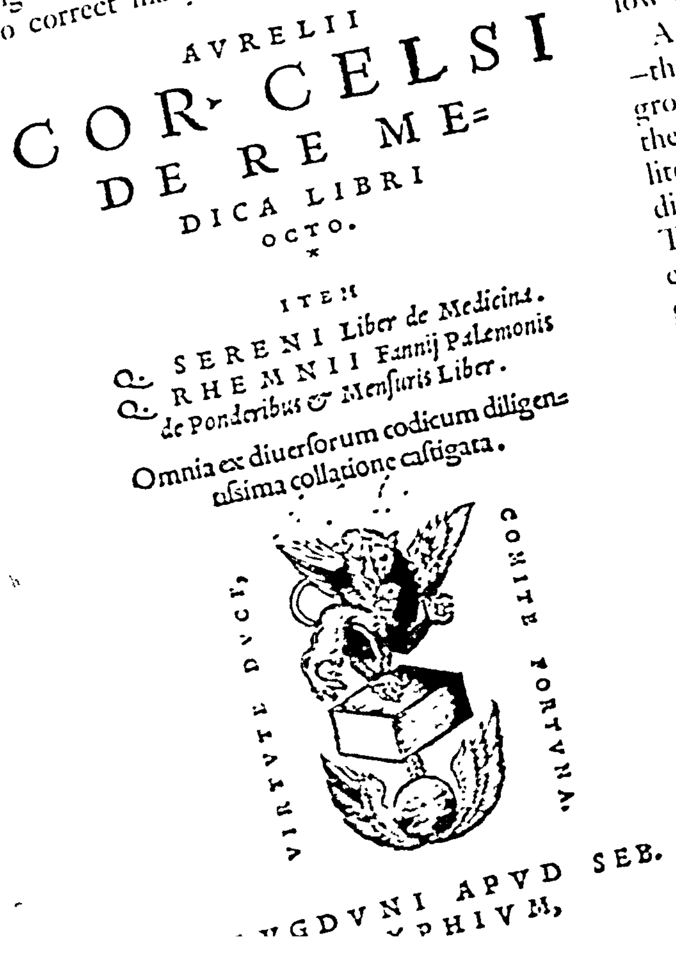
From the broken clay tablets of Assyria and Babylonia a fair amount of information is available, more particularly with reference to diseases of the mouth and esophagus. The term "esophagus" was used to designate the "mouth of the stomach;" and long before the time of the famous Greek physicians "cardia" was used for "stomach."

Photostat of page from Ebers' Papyrus.

PRE-CHRISTIAN ERA

The sixth century B.C. can be taken as a secondary starting point, as from that time on there is some corroborative material as to what was known of medicine, and therefore gastroenterology.

Alexandria was the great seat of learning. Here was assembled a great library of manuscripts, numbering, it is said, over four hundred thousand. The largest portion of these were devoted to medicine. Here practiced one of the most learned physicians of his time, Herophilus, thought by many an equal of Hippocrates and Galen. He was a great anatomist and surreptitiously dissected many a human body, thereby gaining much knowledge, so that he was able to correct many erroneous anatomic con-



AVRELII
COR. CELSI
DE RE ME-
DICA LIBRI
OCTO.

ITEM
Q. SERENI Liber de Medicina.
Q. RHEMNII Fannij Palemonis
de Ponderibus & Menſuris Liber.
Omnia ex diuerſorum codicum diligen-
tiſsima collatione caſtigata.

VIRTVTE DVCE, COMITE FORTVNA.

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secution, centers of learning shift from one place to another. So now there is a shifting from Alexandria to Greece, then to Rome. The Romans of that day were in a period of intense nationalism, and resented anything which came out of Egypt or Greece, particularly Greece. The result was that Roman medicine was of an exceedingly low level.

A quaint custom originated in these times —the "burning of the books." Wherever a group gained power in the political or theological arena, they made certain that all literature which might in any way contradict their own teachings should be burned. This usually took place in the form of a ceremony in a great public square amid general holiday festivity. Medicine was fortunate, for in proportion to other sciences it lost less; each group seemed to fear losing that of which all knew so little and which affected their own precious lives.

In the two centuries prior to the Christian Era there was little of interest. Two individuals were of passing interest, one surrounded with a halo of general approbation, the other obscured in a veil of shadow. The obscure one was the more interesting, however. His name was Serapion and he practiced in Alexandria. Apparently he was an extreme individualist. He scrapped everything, threw all dogma out of the window, claimed that he practiced medicine based entirely on his own observation, as he had found too many glaring errors in the works of the so-called authorities, and it was his belief that time would reveal many more. His gastroenterological contribution lay in the use of infusions of cascara bark to produce purging.

The one that the world has chosen to crown with laurels was Asclepiades. Volumes have been written about him, and it is unnecessary to mention anything more than that he recommended and used opium in the treatment of abdominal pain, colic and diarrhea

In the year 30 B.C. a Phoenician physician practicing in Rome gave the first description of fistula in ano and the methods he used in treating it, but no manuscript of his authorship has ever been found.

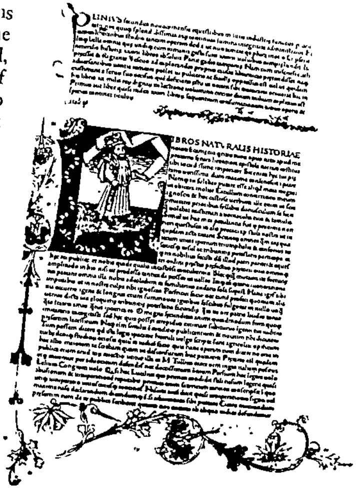
These years represent a time when the love of truth for its own sake disappears from the world and is replaced by expediency. An invisible justice, however, seems eventually to balance the scales. As the sterile period of untruth and deceit waned, we come to the first century of the era of Christ, and the Golden Age of Rome. To go into the brilliance of this period is a task in itself and really amiss here.

FIRST CENTURY A.D. THROUGH GALEN

The great medical mind of the time was Celsus. Critics have said that he was not as great as he has been made out to be, and they argue that it was only because those around him were so poor that he stands out. He represents a transition in medical progress. He compiled an immense and elaborate encyclopedia of all known medical knowledge. He was the first physician to advocate tonsillectomy. He wrote of gastric ulcer and was perhaps the first to write out and use in his practice a diet for ulcer patients.

Perhaps at no time in history has man been called upon so swiftly and so drastically to change his ways of thinking as in the first century. It was the time of Paul, the Apostle, and the influence upon people of Paul and his teachings was second only to that of the Master himself, Christ.

The greatest scientific and intellectual mind of this first century was Pliny, called Pliny the Elder in order to differentiate him from a son who was to follow in his footsteps Here again a man is given great credit as a medical mind when actually he was mainly a compiler of medical material. He enjoyed an influential position and had access to an enormous amount of manuscript material, mostly of medical content, which he brought to the attention of the world. Many things which through oversight or neglect had been passed over, he brought again into use, illustrating the contention that many personalities serve mainly to hold together the links of knowledge which preceded them.



No 213 Plinius Naturalis Historia Venedig Joh de Spira 1469
Editio princeps.

Title page from early incunabula edition of Pliny.

Pliny's contribution to gastroenterology was the first description of congenital pyloric stenosis, its symptomatology, and some anatomical drawings of the condition, which could not be based on anything but actual postmortem "look see." He himself laid no claim to originality in this observation, being careful to mention that he found the description in his searching of manuscripts. His *Natural History* is an encyclopedia of all science, comprising thirty-seven volumes, three of which are devoted entirely to medicine.

Following Pliny was a simon-pure practicing physician named Dioscorides. His interest lay in botany and he traveled much, collecting plants, herbs and grasses. Later he wrote a text in materia medica which for fifteen hundred years was to serve as an authoritative source of knowledge. In it he describes such practical things of usage as rhubarb, squills, cascara, elm bark and camphor. To him must be given credit for the first description of the hypersalivation, bleeding gums, fetid breath and diarrhea of mercury overdosage. He advocated the use of tartar as an emetic to rid the stomach rapidly of poisonous substances. To the book collector he is a delight. Some of the incunabula editions of his works are of indescribable beauty, the printing, the binding, the format all exciting the most profound admiration.

For the next one hundred and fifty years, although medicine flourished, there were no notable contributions in the gastroenterological field. In general culture the Chinese were responsible for a step forward of exceptional significance. A eunuch attached to the Emperor's court discovered a process for making pure rag paper and presented the formula to his monarch.

Minor contributions made during these years have been lost in the shuffle of time. During the reign of the Emperor Trajan there practiced in Rome a Syrian physician named Archigenes, who had for a patient the Emperor himself. He made extensive

Ephesus, described the liver and its lobes and wrote in much detail about sensory and motor nerves and their influence upon the ailments of human beings, particularly gastrointestinal ailments.

Then there appeared upon the scene a man who was so to influence medical thought for centuries that many believe that instead of contributing to the advance of medicine, he inadvertently served to retard it. This man was Galen. Primarily of a physiologic bent of mind, a research man, had his work gone but a step further, rather had his interpretation of what he saw been sounder, he would have antedated Harvey's discovery of the mechanics of the circulation of the blood by hundreds of years. He was a prolific writer on medical topics. In Volume 3 of the five-volume Greek edition of his work printed by the famed Aldine Press of Venice in 1525 there is a magnificent description of massive gastric hemorrhage and its differentiation from the hemoptysis of phthisis, together with suggestions for its treatment.

Practicing in the same city at the same time was a physician named Aretaeos, only slightly less a scholar than Galen. He gave us our first description of diabetes mellitis, its polyphagia, polydypsia and sweetness of urine, and outlined a method of dietetic therapy. He described in addition the premonitory aura of epileptic seizures; in the treatment of epilepsy he stressed, above all, the necessity for regularity in bowel elimiwhatever they had seen that was new. Having invented the process of making rag paper, they now made a similar noteworthy contribution in the invention of black ink. Prior to this they had been using red ink, made from the cinnabar so plentiful throughout China.

The fourth century has as its most famous physician Oribasius. His special field was the spleen, and he wrote a text on the diagnosis and treatment of diseases of the spleen. In those times, in order to justify your standing as a great physician, it was the custom to write a great encyclopedia of medicine, the larger the volume the better. Oribasius was no exception. He wrote an *Opus Major* which consisted of seventy volumes of manuscript, thirteen of which were devoted to the spleen. Unfortunately, the greater part of this manuscript is lost. One wonders how it could be possible to write thirteen volumes on the spleen alone, as volumes were volumes in those days.

A lesser light of the time was one Posidonius, probably the first neuropsychiatrist. He attempted to localize certain body functions in certain brain areas and first described the symptoms of brain tumor, stating that the volatile, explosive type of vomiting associated with it was diagnostic. He mentioned "increased heat of the brain," which could be interpreted as meaning increased intracranial pressure.

Another physician, Sextus Placitus, must be given credit for the first written text in endocrinology. His manuscript, entitled *Liber de Medicina ex Animalibus*, describes the various parts of animal anatomy recommended for use in various diseases. Usually these were parts not ordinarily mentionable in casual drawing-room conversation. This manuscript survived and was printed in 1538 in Nuremberg by one of Gutenberg's apprentices.

The fifth century was one of gross inferiority as compared to the time which immediately preceded it and that which came after. Its chief intellectual light was a physician named Proclos, although in reality he was more astronomer and mathematician than doctor. At any rate, he wrote a *Home Book of Medical Practice*, a sort of "What to Do Until the Doctor Arrives." What is of interest in Proclos is that the great Avicenna, an illustrious name in medicine hundreds of years later, was not so honorable but that he could stoop to publish this little manuscript as his own work under the title *Light of Lights*, and without changing a word or rearranging a sentence. In later years lesser personalities followed the same procedure, always issuing the work under such beautiful and high-sounding titles as *The Flower of Divine Things;* and in the thirteenth century we find a great pillar of the church and of philosophy issuing the identical manuscript as his own under the grandiose title of *Liber de Causis et Processu Universitatis a Causa Prima.*

The sixth century was no better than the fifth. Most of the medical works of the period were a mere rehash of what had been said many times before. Once again the Chinese come into the picture. There is ample manuscript evidence that the Chinese were printing at this early date. The first book actually printed by them, by means of wooden blocks, consisted of six pages, each about a foot wide and two and a half feet in length, pasted together lengthwise and then rolled up. The expense of printing it had been guaranteed by a wealthy merchant. It was found in 1907 in a Buddhist cave in the province of Czechuan, about which we now read almost daily as the scene of Japanese war activity. It was bought by the British Museum and until recently was on display there. To the Chinese, then, credit must be given first for paper, then for black ink, finally for printing.

Another Chinese manuscript, written in the seventh century, with an entire chapter devoted to syphilis, was also lost from sight and found in Japan as recently as 1909.

In the West the seventh century furnishes one item worthy of mention. There occurred the destruction of the great library at Alexandria, and it is impossible to estimate the blow to medical progress, as the greater part of the manuscripts there were medical.

Perhaps one should not pass over the sixth century without mentioning Alexander of Tralles, who wrote an extensive treatise on intestinal worms and introduced the use of rhubarb in the treatment of jaundice.

The eighth century was absolutely barren of any worthwhile medical contribution, and the ninth is noteworthy only for the writing of the first medical manuscript in Hebrew. Toward the end of the century there appeared an individual worthy of time and study. He was a Persian physician named Rhazes, who practiced in Bagdad, and was the greatest clinician of his time. He first made and used a hydrometer for measuring the specific gravity of urine. Along gastrointestinal lines he wrote a book entitled *How to Cure Stomach Ache in One Hour.*

TENTH THROUGH TWELFTH CENTURIES

The tenth century was characterized largely by Spain's entering the picture as a contributor to medical progress. This was due mainly to the wanderings of Arabians to her large cities, more particularly around Cordoba. One Albucasis stands out as a great physician, but he apparently was not interested in gastroenterology. A Persian pharmacist who was also a physician, carrying the almost unpronounceable name of Abu Mansur Muwaffak, described the uses of sodium bicarbonate and recommended its use in diseases of the stomach. That he was probably a capable physician can be estimated from the fact that he also recognized lead poisoning and its gastrointestinal features.

The time of Ibn Sina, known more familiarly to us as Avicenna, was the first half of the eleventh century. Although primarily a philosopher, he was also a great physician. His *Canons* have come down to us as his bibliographical monument. For six suceeding centuries these books served as the supreme authority in medicine. The entire work totals over one million words, which gives some idea of its scope. Many editions of this work were published during the incunabula period of printing, in 1473 in Milan, in 1476 in Padua, in 1483 in Venice. Small editions of some parts of the work were printed in later years.

Within its pages may be found a description of mediastinal abscess pressing upon the esophagus and causing dysphagia. The differential diagnosis between hemoptysis of phthisis and hematemesis of gastric inflammation is carefully elaborated. A whole chapter is devoted to emetics and purgatives. Fever with accompanying intestinal disturbance caused by drinking polluted water is described. This may have been typhoid. Nervous ailments are covered and there is an entire chapter devoted to love sickness and its effect upon the stomach. Although alcoholic distillation of liquor was a Chinese discovery, Avicenna gave it great impetus, as he distilled everything trying to find new compounds, new drugs.

There was one drawback to Avicenna and his work. It so completely dominated the times and he so overshadowed his confreres by his all-encompassing brilliance that no one bothered to think for himself, merely quoting whatever Avicenna had written upon the subject in question.

The last half of the eleventh century was the time of Omar Khayam, the Persian poet. These are declining years in that they marked the end of Hebrew and Moslem influence upon science, indirectly therefore upon medicine. There occurred an awakening of Christianity. A single high spot was the appearance of the first great herbal, the

Macer Floridus. This was to be followed by many others, enormous collections of botanical knowledge with particular reference to medical application.

The twelfth century was the age of translators, rather than originators. Everything possible was being translated from Arabic into Greek and from Greek into Latin. It was the time of the Crusades, treated in history as a lofty and noble effort. As a matter of fact, the Crusades were business promotions organized for profit, for the exploitation of the simpleminded and the credulous, blinded by faith and faith alone. The price paid by civilization for this lofty enterprise was the wanton sacking and pillaging of libraries and the destruction of collections of manuscripts.

Surgeons were a despised lot in the social order of the day for two reasons. One was the Jewish abhorrence of blood, the other was the Christian abhorrence of meddling with the human body, cutting into it whether living or dead. Skin diseases, which were considered as too disgusting for any respectable physician to handle, were referred to surgeons; this gives some idea of the contempt in which surgeons were held.

Maimonides, the great Jewish physician who lived during this time, described hemorrhoids and many types of astringent decoctions to be used in local applications for their relief.

SCHOOL OF SALERNO

Now we arrive at an epoch in medicine, the coming into prominence of the medical school at Salerno. Many individuals, each worthy of detailed description, will have to be skipped over here. Hugo of Lucca, Roland of Parma, Roger of Salerno are prominent names of this time. The first did much intestinal suturing, and his preparation and antiseptization of suture material are evidences of his enlightenment. As wounds of the abdomen by arrow or sword were all too frequent in these days of constant warring, his experience in this field was enormous; and his end results, glowingly recounted by his son assistant, sound much like the glowing accounts we hear today from certain sources.

A great manuscript came out about this time, the *De Proprietatibus Rerum* ("The Properties of Things"), by one Bartholomaeus, known as Bartholomew the Englishman. Later many incunabula editions were printed, each a monumental work of typography.

To digress for a moment, it is of interest to note the requirements of the School of Salerno for a medical degree. In the royal decree of Frederick II, it was ordered that to acquire the right to practice medicine, five years were to be spent in study and theory, then one year as an apprentice to an experienced physician. Those wishing to practice surgery must spend two years as assistant to a practicing surgeon.

During these early centuries medicine could not be considered as a science. It was more like an art. It still is an art today, except that it is based on the accumulation of much greater knowledge. We know that the medical men of that day were seriously deficient in knowledge. Many of them labored under the delusion that if you could name a thing you knew all about it. If you could give it several names, then you most certainly knew all about it.

Many doctors wrote treatises which on analysis were only recapitulations of what somebody else had said, only that they changed a word here and there in order to give a varnish of originality. That quaint custom has survived into present times.

Medical progress was slow, unlike today, when new additions to our knowledge can be looked for almost every year. If medicine has progressed rapidly in recent years, it is because it has had the help of allied sciences, biology, chemistry, bacteriology, and in addition the help of many new inventions and discoveries, the microscope, spectroscope, X-ray, radium. The ancient practitioner had only what he gathered from his own observations and experience and from the experiences of others as set down in books.

Postmortem examination of the body was introduced in Bologna during this century. Most of the anatomy heretofore had been learned from the pig or from observations made when operating upon both living and dead in the theater of war. Much attention was focused upon the liver, and in practically all manuscripts written during these times, chapters were devoted to its anatomical structure and deviations.

There is a manuscript in the Bodleian Library at Oxford and another in the State Library at Florence written during these times; both give directions for the preparation of dilute and concentrated hydrochloric acid. No mention is made, however, of its medicinal use.

Thomas Aquinas' *De Corpore Humano* contains beautiful anatomical plates which are supposed to have inspired Leonardo da Vinci, possibly even to have been copied by him under the claim of original authorship.

FIFTEENTH AND SIXTEENTH CENTURIES

The fifteenth century was marked by a great renaissance in all learning. It represents the transition period from medieval to early modern. Significant events took place which singly and collectively influenced all scientific learning, therefore medicine.

The most significant of these was the invention of printing, although we must keep in mind that during this same time Columbus discovered America and Vasco da Gama found the Northwest Passage, proving that you could sail around the world from East to West and arrive home again without ever turning back. Copernicus established astronomy as a definite science.

Outstanding medical personalities were, in Italy, Johan Fernelius and Nicolas Leonicensus; in Germany, Heinrich von Nettescheim; in England, Thomas Linacre. Fernelius described acute appendicitis with rupture of the appendix. Leonicensus and von Nettescheim's contributions were in the field of liver disease. Linacre's contributions would require pages of description.

This was the day of the great printers and presses. In addition to Gutenberg, there was Caxton in England, the Giunta and Aldus press in Venice, Froben in Basle, Plautin in Antwerp, Elzevir in Leyden, monumental names to the collector of the books from this period. The specimens of typography which these men produced would excite the admiration and awe of any modern. Medical manuscripts comprised the bulk of available material, and there was feverish competition among these printers to get into public hands examples of their handicraft. In order to embellish their works and justify their pride in them, the binding of a book became a labor of love and art. Some of these bindings were embellished with precious stones, diamonds, rubies, even emeralds, and often in profusion. The tooling of beautiful leathers reached a perfection never surpassed. Embroidered covers, bindings of lace, bindings interworked with horn and shell, chain bindings, are impossible to describe in their variety and beauty.

To return to gastroenterological fields, one Mathius Frelrich, a priest in a small village in Germany, described the association of cirrhosis of the liver and chronic alcoholism, making it the subject of sermons to his parishioners in whom he tried to implant a fear of imbibing too freely by describing eloquently all the details of death from this illness.

Next came Paracelsus. The man's versatility can be best estimated from his work. To him is given credit for the discovery of hydrochloric acid in the stomach. He first prepared sulphuric acid and was the first to use antimony extensively; although used for centuries in the treatment of skin diseases, he first popularized its use. He was far from being a refined doctor of medicine. He was a migrant, a vagabond, in plainer language, a bum. He hitchhiked his way all over Europe, drunk most of the time. Many a brawl did he engage in, in the taverns and resorts he frequented, and he learned much about syphilis first hand, as his chosen companions were more often than not barbers, bath attendants, gypsies and prostitutes.

In spite of his personal life, he contributed in a minor way to our field. He extracted laudanum from opium and praised its virtues in cases of colic. He used both potassium and sodium sulphate as a purge, and both arsenic and copper in anemias and tuberculosis. His was a contradictory character; he blundered much; but sandwiched in between his many mistakes were some great ideas.

Essentially this period belongs to the anatomists—Vesalius, Servetus, Eustachius, Sylvius, Fallopius and Fabricius, each name bringing to mind some familiar anatomical point. Eustachius, in addition to describing the tube to the ear which bears his name, first described the adrenal glands, though not any conditions associated with change in either their structure or function. Ambrose Paré, the great French surgeon of the day, had in his early days been nothing more than a wandering herniotomist who did not know how to repair a hernia without castrating the patient. Cesalpinus and Fracastorius are prominent names of the time, the latter the great syphilographer, famous for his hexameter poem describing syphilis, *De Morbo Gallico.*

SEVENTEENTH CENTURY

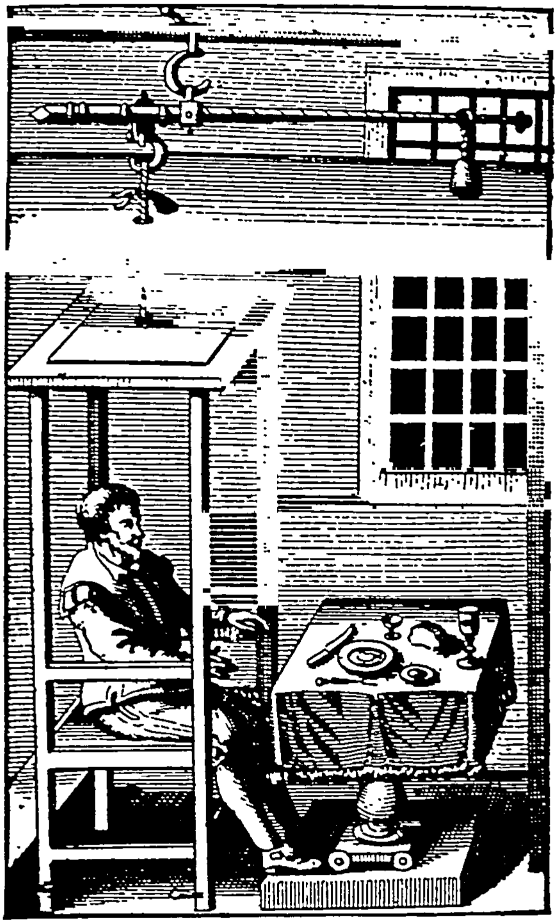
The seventeenth century furnished a milestone in the progress of medicine—William Harvey's discovery of the circulation of the blood, published under the title *De Motu Cordis* in 1628. Although this contribution was not gastroenterological, indirectly it influenced every prevailing medical idea, causing at first a tremendous amount of controversy.

Following Harvey's discovery, there came a veritable flood of gastrointestinal contributions. These were made by men who did not enjoy great reputations as physicians, but who were patient, plodding workers carefully recording their observations. Some of these contributions follow:

George Wirsung (1642)	Discovered the pancreatic duct.
Jean Pecquet (1651)	Discovered the thoracic duct.
Thomas Bartholinus (1652)	Discovered the intestinal lymphatics.
Francis Glisson (1654)	Described the liver capsule.
Johann Peyer (1677)	Described the lymphoid follicles of the small gut.
Johann Brunner (1687)	Described the glands of the duodenum.

In 1680 came the invention of the microscope. From then on medicine advanced in rapid strides. Malpighi, the great histologist, added much to our knowledge of the physiology of the liver and spleen. Kircher conducted experiments upon the nature of putrefaction, showing how maggots and other living creatures develop in decaying matter. He also found that the blood of patients with plague was filled with a countless brood of "worms" not perceptible to the naked eye, but observable through the microscope. A pity that he did not advance the one step further and identify these "worms" as bacteria. Malpighi's friend Baglivi, a sage and philosopher, worked along similar lines, but also fell short of the goal.

René Descartes, known best as a philosopher, was the first to describe the peristaltic action of the musculature of the stomach. He spoke of it as a grinding and crushing process, entirely mechanical in its action.



Sanctorius on the Steelyard. (From his Ars de statica medicina, Leyden, 1711.)

An ingenious fellow was one named Sanctorius. In his *Dissertations* he speaks of using a clinical thermometer, a pulsilogium, or pulse clock, for counting the pulse and an abdominal and chest trocar or cannula for the removal of fluid. As a pioneer in the field of metabolism, he described an ingenious contraption for measuring what he called "insensible perspiration." Patients were weighed before and after eating, as well as while asleep and while engaged in various activities of daily living.

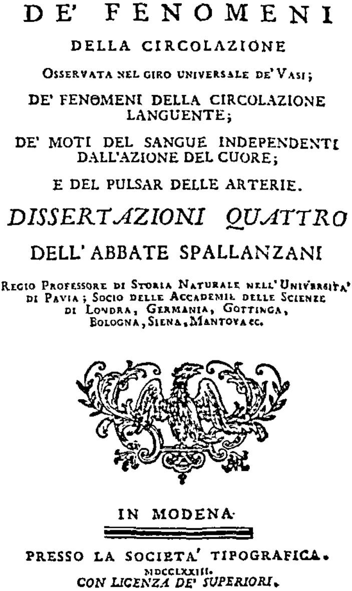
Van Helmont next appeared on the horizon. He analyzed bile, and his contributions to medicine and chemistry are of the greatest importance. The discovery of gastric juice is attributed to him, specifically its fermentative action; his observation was that it contained varying ferments, each with a definite function in regard to certain types of food. He was a great dietitian and recommended diets for the prevention of diseases as well as for their cure. He was one of the earliest to devote some study to occupational diseases, especially among metal workers. He first reported poisoning by coal gas. He also first introduced the idea of determining the specific gravity of urine.

Regnier de Graaf was a versatile Hollander. His efforts were in two fields, in each of which he did most valuable and memorable work. He was one of the first experimental physiologists, and credit for much of what he did has accrued to men who later adopted his methods and succeeded in publicizing them to their own advantage. All too often in the history of medicine this gross injustice has happened. Generous praise and fame have come too many times to those who have made the last steps in a discovery and have reaped the result of all the discouraging effort which has gone before. The world has been too miserly in its generosity toward those who have made the initial and least profitable steps. De Graaf studied the pancreas and the digestive action of its juice, using dogs with pancreatic fistula, as Claude Bernard, Pasteur and Pavlov were to do later. One of his assistants named Bonn established the fact that the pancreatic juice was alkaline in reaction. De Graaf studied bile, using actual biliary fistulas, obtaining his specimens under different environmental and dietetic conditions. Credit must also be given him for the first complete histologic description of the structure of the testis and the ovary and for the original description of the ovarian follicles which bear his name.

Peyer, who described the lymphoid follicles of the intestine, Peyer's patches, came next. He believed that these glands secreted a digestive juice. Brunner, who followed him, believed likewise of the glands of the duodenum. Glisson, a Frenchman, a combination of anatomist, physiologist and pathologist, contributed a description of the anatomy of the liver, its capsule and its blood supply, particularly the anatomy of the portal vein, thereby establishing the correct foundation for further studies on this organ.

In England Thomas Sydenbaum was the great clinician and internist of the day. An out and out individualist, possessed of tremendous energy, he cared not an iota for the opinions of his medical brethren. He maintained that the capacity of the human mind was limited; therefore there was no reason why the cause of everything that happened must be learned. He felt a very great sense of responsibility to his patients, maintaining that he was answerable to God for their care. As he himself suffered periodic attacks of renal colic, plus painful episodes of gout, his solicitude for those in distress can be understood. He contributed a rather comprehensive description of the various types of dysentery which he had encountered. A keen observer, in his description of malarial fever he calls attention to the associated enlargement of the spleen.

The seemingly insignificant often serves to shape trends of great import. Medicine at this time had bogged down and was in a rut. Materia medica was to give it the needed jolt, and at the same time to sweep aside a great deal of the superstition and quackery which had crept in. The specific agency to accomplish this was quinine. When people actually saw an unremitting malaria stopped by quinine in a few days, where formerly they had taken every conceivable abomination for months, they were incredulous, yet there was the proof before their very eyes. Then came the use of ipecac in the treatment of dysentery. At first ipecac was a secret remedy and very costly; the French government at one time paid the equivalent of $25,000 for the formula.



DE' FENOMENI
DELLA CIRCOLAZIONE
OSSERVATA NEL GIRO UNIVERSALE DE' VASI;
DE' FENOMENI DELLA CIRCOLAZIONE LANGUENTE;
DE' MOTI DEL SANGUE INDEPENDENTI DALL'AZIONE DEL CUORE;
E DEL PULSAR DELLE ARTERIE.
DISSERTAZIONI QUATTRO
DELL' ABBATE SPALLANZANI
REGIO PROFESSORE DI STORIA NATURALE NELL' UNIVERSITA' DI PAVIA; SOCIO DELLE ACCADEMIE DELLE SCIENZE DI LONDRA, GERMANIA, GOTTINGA, BOLOGNA, SIENA, MANTOVA ec.

IN MODENA

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CON LICENZA DE' SUPERIORI.

Title page from Spallanzani's work.

EIGHTEENTH CENTURY

In the early part of the eighteenth century Holland came into the f

Herman Boerhave of Leyden and his pupil, Albrecht von Haller, were responsible. The first wrote a description of rupture of the esophagus as the result of pressure by an aortic aneurysm. He described an increase in the size and number of gastric rugae occurring in certain digestive disturbances. This observation was based upon postmortem examination. Von Haller had an imaginative mind and was considered the master physiologist of his day. It has been said that many of the modern discoveries in gastroenterology can be found in his writings of two hundred years ago. He was one of the first of the "library surgeons." He described marvelous operative methods, yet he never performed an operation in his entire life.

In Italy Spallanzani devoted almost his entire life to the study of gastric juice. He demonstrated that its digestive property was as active on food outside the body as within, and that gastric juice prevented putrefaction of food even after this change had started.

Other names of this period, with their contribution to gastroenterology, would be:

Vater	Described the entrance of the bile duct into the duodenum.
Lieberkuhn	Described the intestinal crypts bearing his name.
Meckel	Of diverticulum fame.
Wrisberg	Described the anatomy and function of the vagus nerve.

Toward the middle of the century came another Italian, Giovanni Baptista Morgagni. This gentleman waited until he was seventy-nine years of age before publishing a work based on over fifty years of observation, teaching and practice. He looked at medicine entirely from an anatomical point of view, and much of his knowledge was based upon detailed study of postmortem tissue. He first described acute yellow atrophy of the liver and the occurrence of gumma of the liver in syphilis. In 1779 he published his *De Causis Morborum* ("Cause of Diseases") which contains this description of gumma.

In England there was a contemporary of Morgagni's who had often journeyed to Padua to study with him, Matthew Baillie. A Scotchman with a tremendous practice, which had made him very wealthy, he was the last of the great physicians of the eighteenth century. Matthew Baillie's contributions to the subject of gastroenterology were:

1. A description of the anatomy and pathology of gastric ulcer.
2. A description of transposition of the abdominal viscera.
3. A description of the ulceration of Peyer's patches in typhoid fever.
4. An elaboration of the definition of cirrhosis of the liver.

NINETEENTH CENTURY

The nineteenth century was the era of cellular pathology, with Virchow as its greatest exponent. From the standpoint of histopathologic changes in individual cells or collections of cells, medicine now hit its stride. In addition to his descriptions of cellular change in ulcer, in intestinal ulceration and in gastritis, we are indebted to Virchow for a complete description of amyloid degeneration of the liver and also of trichinosis.

In England there was Richard Bright, whom we are all too apt to think of only in connection with the kidney ailment bearing his name. An able clinician, he did much work on the pancreas, upon pancreatic diabetes, pancreatic steatorrhea and atrophy of the liver, and was the first to give an accurate account of status lymphaticus, of echinococcus disease and of echinococcus invasion of the liver.

Thomas Addison, a contemporary who, like Bright, we think of immediately only in connection with the disease bearing his name, contributed chronologically the first description of pernicious anemia. His *Constitutional and Local Effects of Disease of the Supra-Renal Capsules*, published in 1855, brought him fame.

Von Liebig, a German chemist, elaborated some theories as to metabolism in general and formulated more accurately the prevailing ideas as to fermentation and putrefaction. Then followed four minor contributions to general medicine. Inasmuch as those constitute the mortar in the building of the final edifice, holding the main bricks or major contributions together, they are mentioned:

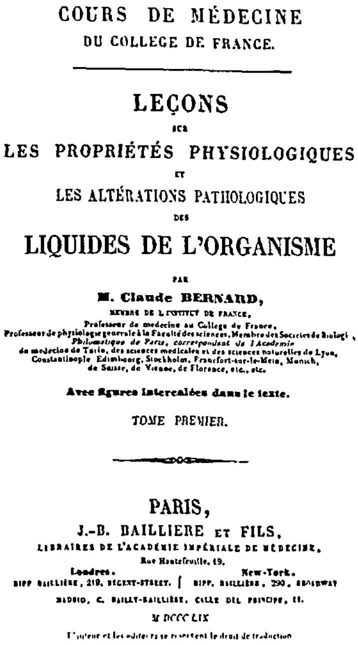
Pettenkofer	Discovered the test for bile in urine which bears his name.
Fehling	Discovered a test for sugar in urine.
Heller	Discovered the nitric acid test for albumin in urine.
Gmelin	Discovered the nitric acid test for bile in urine.

America first appeared in the picture by way of Beaumont's classical contribution, his *Physiology of Digestion*, based upon studies of the gastric fistula of one Alexis St. Martin, a French Canadian trapper. Like Harvey's *De Motu Cordis*, it constitutes a landmark in medicine. The fact that it can only be mentioned here does not minimize in the least its importance.

Brodie, the bone surgeon, best known for his description of the abscess named after him, did considerable experimental work on the influence of the vagus nerve on gastric secretion.

Phillip Syng Physick of Philadelphia, teacher, diagnostician and one of the most remarkable characters in the history of American medicine, in 1836 described diverticula of the rectum and sigmoid, and was the first physician in America to pass a tube into the stomach in a case of poisoning, then by means of a syringe wash it out and put in an antidote.

In the latter half of the nineteenth century physiology played a most important part. Personalities were von Helmholtz, Ludwig and Claude Bernard. Bernard and his experimental researches upon gastrointestinal physiology furnished the foundation for what we today choose to call modern medicine. With no intention of minimizing the importance of his work, we must keep well in mind that much of what Bernard did was only a continuation of de Graaf's original work. Later a famed physiologist, whose fame and prestige are based upon a further elaboration of these same ideas, will be mentioned, yet credit should be given where credit is due, to de Graaf.


COURS DE MÉDECINE
DU COLLEGE DE FRANCE.

LEÇONS
SUR
LES PROPRIÉTÉS PHYSIOLOGIQUES
ET
LES ALTÉRATIONS PATHOLOGIQUES
DES
LIQUIDES DE L'ORGANISME
PAR
M. Claude BERNARD,
MEMBRE DE L'INSTITUT DE FRANCE,
Professeur de medecine au College de France,
Professeur de physiologie generale à la Faculté des sciences, Membre des Societes de biologie,
Philomatique de Paris, correspondant de l'Academie
de medecine de Turin, des sciences medicales et des sciences naturelles de Lyon,
Constantinople, Edimbourg, Stockholm, Francfort-sur-le-Mein, Munich,
de Suisse, de Vienne, de Florence, etc., etc.

Avec figures intercalées dans le texte.

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Title page from Bernard's work.

So much has been written about Claude Bernard that only a bit of his personal life will be mentioned here to provide an insight into the conditions under which he had to work. His wife was a shrew, exceedingly temperamental and given to wild bursts of temper. It was nothing for her to invade either his study or his laboratory, put on one of her tirades, pick up his notes or whatever he was working on, tear them to bits and throw them out of the window or into the fireplace. Even this was mild compared to what she was capable of. One could hardly call these conditions conducive to the successful working out of an obscure physiological problem. Yet somehow Bernard managed, and rather successfully if we judge by these contributions to gastrointestinal physiology:

1. He established the glycogenic function of the liver.
2. He established that puncture of the fourth ventricle of the brain in dogs produces temporary diabetes.
3. He established that gastric digestion is only a preparatory act.
4. He established that pancreatic juice has the following functions: (a) it splits fats into fatty acids and glycerin; (b) it splits proteins received from the stomach; (c) it converts starches into sugar.
5. He demonstrated the vasomotor mechanism of the stomach.

Before passing on to the twentieth century, two nonmedical views of Virchow, who died in 1902, are presented inasmuch as they are pertinent to present-day events. One was that it was absolutely impossible that any one man could ever be infallible in judgment and knowledge. His second was that the Prussians were not a Germanic race, but a barbaric, destructive Mongol remnant.

The work of Ivan Pavlov stands out as the greatest in this field. It is illustrative of the concept that succeeding generations forge ahead by stepping up on the shoulders of those who have preceded them. His work was a further extension of that done by de Graaf and Claude Bernard. Pavlov's life and work would require an entire volume, but as most of it is contemporary, we are all familiar with it.

CONCLUSIONS

The men in our own time who have caught the burning torch of scientific progress from other hands and have successfully kept it burning need not be mentioned here, as they are familiar to us all. They are the present day builders whose function it is to add to the structure, and though the structure may never be completed and the final edifice never be viewed by them or by us, they have not broken the strands in the chain but have served to keep it intact. Little more could be asked of them.

H. G. Wells in his *Outline of History*, which gives little credit to the influence ot medicine on civilization, does however give us a creed which is vitally necessary if the progress we have outlined here is to be maintained:

"There is a need today for the self-discipline of each and every individual in the feeling of social obligation and for personal and international good manners in order that these may operate for the greatest good of the greatest number, that the many may not continue to suffer for the crimes, whims, inaptitudes and insanities of the few."

In closing, we realize that many omissions have occurred in our endeavor to outline the growth and progress of gastroenterology, but that this sketch should be all-inclusive was never intended.

The Use of the McBurney Incision in the Treatment of Carcinoma of the Right Colon

THOMAS B. NOBLE, JR., M.D., F.I.C.S.
INDIANAPOLIS, INDIANA

URGENT need may lead the way to improvement of method. Carcinoma of the cecum and ascending colon is commonly seen advanced to the point of dissolution of the intestinal wall posteriorly. The sloughing abscess and its effects on the condition of the patient present the surgeon with serious and multiple problems.

In order to limit attention to consideration of operative approach and method, let us dispose of a very important aspect of the problem by merely saying that transfusion and all reasonable methods of improving a patient's condition will not bring about an afebrile state in some of these cases after perforation, and that many of them are in all ways unfavorable risks at the time of operation. This statement hurdles the preoperative concern and stresses the fact that operative method must be controlled by the patient's physical state if we are to extend the benefits of surgery to advanced and perhaps incurable cases.

INCISION

It is obvious that any vertical central incision through the abdominal wall will offer such exposure that often there must be included in the operative field the mesentery of the small bowel, the omentum, the transverse colon and escaping loops of jejunum and ileum, as well as access to the general peritoneal cavity. The certainty of evil consequences from removing a perforated carcinoma of the colon through a central incision needs no emphasis, since the dragging of the infected, sloughing, foul mass toward the midline presents the almost certain hazard of spreading contamination.

Proximal colostomy has always seemed to us a cowardly move in surgery, even in metastasized cases, and our study of end results warrants continuation of this attitude. To offer reasonable surgical risk to these serious and advanced cases requires, then, the limitation of the operative field to a "silent zone"—one in which we do not expect to hear from peritonitis. It requires removal of the carcinoma and its mesenteric metastases, or the major portion of them. It requires a serviceable enteroenterostomy and a closure of the abdominal wall with maintenance of its integrity. These requirements necessitate an incision well over to the right to begin with.

The muscle-splitting, McBurney type of opening has been adopted by the author. The skin incision may be transverse, slanting, or vertical as suits anatomy and surgical choice. The opening through the muscle is chosen to offer ease of ileocolostomy at conclusion, and is therefore rather high over the healthy colon to be used in anastomosis. The liberation of the hepatic flexure is made much easier by the higher opening, and the terminal ileum and cecum are normally so free that they may be moved from the pelvis upward with no difficulty. If the growth is at the ileocecal junction, it may be delivered upward with slight effort after dissection, even though perforated; this again will keep contamination

the keratome was pushed into the anterior chamber, the point was moved up and down to slit the anterior capsule, as with the discission technic. The soft lens substance was immediately removed by mouth suction (see Fig. 3). Here also the posterior capsule was clear and no needling was necessary. In both patients full restoration of vision was obtained within a few days.

This method compares very favorably with the long, drawn-out waiting for absorption necessary when needlings alone are performed. It is quite usual for one to a dozen needlings to be performed on congenital or juvenile cataract, and then absorption does not always occur or the resulting inflammation leaves adhesions (synechiae) that are highly unsatisfactory and not infrequently interfere with good function or appearance of the eye.

We have utilized this aspirating or suction removal of cataract for the past eighteen years in over 200 cases handled by ourselves and associates. We have performed it on a six-year-old boy under local anesthesia with complete restoration of vision. We also used it on a case of toxic cataract (dinitrophenol) in a woman of forty-eight. Altogether we have used it in 14 cases of cataract caused by dinitrophenol with 100 per cent success. The lens softens in these toxic cases and aspirates perfectly. The posterior capsule in all these cases required discission. The retinas fortunately were not affected and, therefore, full restoration of vision was obtained.

Only one unfavorable case being encountered, the results were much more satisfactory than the average. It is therefore only fair to consider this technic as nearly ideal as anything possible in the way of cataract surgery. Unfortunately, it is applicable only where the lens is soft.

If the retina is normal, full restoration of vision is obtained. There is no waiting for ripening to utilize surgery. Another important advantage is that no iridectomy is necessary and the iris is intact, giving round pupils and leaving no cosmetic disfiguration. Another advantage, which will become of increasing importance as the use of contact lenses becomes more general, is that no scar or elevation results at the limbus, so that no elevated contour will interfere with the adaptation of the usual curve of the contact lens. One very attractive young woman of twenty-eight, having recovered her sight by the removal of both cataracts through this suction method, wears contact lenses with the utmost enthusiasm.

SUMMARY

Removal of soft cataracts by suction is an ideal method, as full restoration of vision is quickly obtained, it renders the usual needling operation obsolete and there is no disfigurement. Contact lenses can be comfortably worn after cataract surgery.

Three cases of hereditary cataracta caerulea occurring in one family are reported. The condition was treated surgically in all three cases, with gratifying results.

RÉSUMÉ

Cateracta caerulea héréditaire

L'asportation de cateractes tendres avec la succion est une méthode ideale, parce que complete restoration de la vision est obtenue très rapidement, elle rends l'opération ordinaire avec l'aiguille en désuétude et il n'y a pas d'enlaidissement. Des lentilles speciales peuvent être portées confortablement après chirurgie sur la cateracte.

Trois cas de cateracta caerulea héréditaire se présentants dans une famille sont réportés. La maladie fut traitée chirurgicalement dans tous les trois cas avec des bons résultats.

ZUSAMMENFASSUNG

Erbliche cataracta caerulea

Die Entfernung von weichen Kataralkten durch die Saugungsmethode ist eine ideale,

da sehr bald die volle Sehkraft wieder hergestellt ist, und keine Entstellung auftritt, die gewöhnliche Nadeloperation erscheint dadurch veraltert. Kataraktlinsen können nach der Kataraktoperation bequem getragen werden.

Es werden drei Fälle von erblichen Cataracta caerulea beschrieben, welche in einer Familie auftraten. In allen drei Fällen wurde das Leiden mit zufriedenstellenden Erfolge auf dem chirurgischen Wege behandelt.

SUMARIO

Catarata caerulea hereditaria

Constituye un método ideal el remover una catarata blanda por succión, se obtiene de este modo la pronta restauración de la vista, no deja deformación y el cristalino puede desempeñar sus funciones.

Son reportados tres casos de catarata caerulea hereditaria que se presentaron en una familia. Esta condición fue tratada quirurgicamente en los tres casos con resultado satisfactorios.

RIASSUNTO

Cateratta cerulea ereditaria

La rimozione di sottili cateratte mediante suzione è un metodo ideale, poichè si ottiene un rapido e pieno ristoro della visione rende il metodo usuale con l'ago fuori uso e non resta sfiguramento. Lenti speciali possono essere portate comodamente dopo chirurgia della cateratta.

Tre casi di cateratta cerulea ereditaria nella stessa famiglia vengono riportati. Il disturbo fu curato chirurgicamente in tutti e tre i casi con rallegranti risultati.

INTERNATIONAL COLLEGE OF SURGEONS MEMBERSHIP

For information about membership in the International College of Surgeons, address Mr. Ralph E. Osborne, Business Secretary, The Drake, 1512 Spruce Street, Philadelphia, Pennsylvania.

Present Aspects of the Appendicitis Problem

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TEN years ago the historical phases of the appendicitis problem were reviewed by the author.[5] During the past decade numerous investigations and many important contributions have been made toward the better handling of this problem. Greater agreement now exists among surgeons as to the proper management of neglected cases of acute appendicitis. It was therefore thought that a second presentation, a decade following the original summary, might prove of interest.

All surgeons are in agreement that deaths resulting from appendicitis occur in neglected cases, in which perforation, with varying degrees of peritonitis, is allowed to develop. Efforts in the future must be directed toward the elimination of the complications of late perforating appendixes. This presentation will, therefore, be concerned chiefly with the treatment and management of these neglected cases. No discussion will be presented on the diagnosis of this pathologic entity. It will also be assumed that all diagnosed cases of acute appendicitis are treated by a qualified surgeon, whether or not operation is performed.

Among ourselves we should honestly admit that a certain amount of the blame for the late recognition of appendicitis, and for its consequent formidable mortality rate, which has not been appreciably reduced in the past thirty years, can be laid directly upon the doorstep of the medical profession. Upon first thought, this seems to be an unwarranted accusation. However, all of us have seen and cared for many neglected cases of perforated appendicitis that had been under medical care from the onset of the disease. If an early correct diagnosis had been made and the proper care promptly instituted by the attending physician, the tragic consequences would have been avoided—the long, tedious days of costly hospitalization, the harassing worries to the surgeon, the heart-rending experience of vainly trying to console the grief-stricken relatives.

The educational program pointing out to the laity the dangers of self-medication in instances of abdominal pain has been of tremendous value in lowering the mortality rate from acute appendicitis in Pennsylvania, thanks to the untiring efforts of Bower and his colleagues.[1,2] Other states would do well to emulate the example set by Pennsylvania. If the mortality statistics for acute appendicitis from each individual hospital were presented to the public, they would become painfully aware of situations resulting from poor surgical judgment on the part of an unqualified operator or from needless delay on the part of a physician in consulting with a competent surgeon.

Of great importance is the fact that surgical treatment is a highly individualized procedure, depending first upon the characteristics and condition of the patient, and second upon the skill of the surgeon in charge. Therefore, it is obvious that no hard and fast rules can be safely promulgated for all to follow with the same degree of success.

CAUSE OF HIGH MORTALITY RATE

A false philosophy has made its appearance in this nation: namely, that any young, inexperienced surgeon can care for complicated instances of acute appendicitis with the same favorable results that can be obtained by the older and more experienced surgeon. All of us know that this belief is grossly incorrect and has caused many needless deaths. No capable surgeon can honestly subscribe to such a false hypothesis. Yet it is the common practice in many of our leading teaching hospitals to relegate all cases of appendicitis to the surgical resident. Many attending surgeons feel personally insulted and believe that their professional abilities have been belittled if they are asked to care for a difficult case of acute appendicitis. Yet all of us can easily recall several instances in our past experience where the operative removal and postoperative care of a neglected case of perforated appendicitis taxed our skill and judgment to the utmost.

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More and more, hospital staffs which publish mortality statistics and make an honest effort to obtain a postmortem examination following death, are coming to decree that the younger surgeons consult with their older colleagues in all cases of acute appendicitis. Similarly, the staff physician who allows a patient suffering from acute appendicitis to die without a correct diagnosis being made and proper treatment being instituted, is now due for a very uncomfortable time when questioned by the hospital committee on the exact circumstances of the occurrence. If this situation recurs several times, the physician should be firmly requested to take his patients elsewhere in the future. Such a program would have a very salutary effect on the mortality statistics of the hospital, and of greater importance, would protect more adequately the lives of patients who enter that particular institution with implicit faith in its professional staff.

The estimated, essentially unchanging mortality rate of approximately 20,000 deaths a year from acute appendicitis in this nation constitutes one of the tragic chapters of modern American surgery, and demands the most serious consideration by all surgeons. Any other condition which needlessly claimed an annual death rate of 20,000 persons a year, with its staggering economic loss, would be the object of widespread publicity, to the end of promptly diminishing its occurrence.

OPERATIVE PROCEDURES

Certain concepts in the treatment of acute appendicitis are now generally accepted as axiomatic. Vague recurring pain in the right lower quadrant of the abdomen is not indicative of appendicitis unless other diseases have been definitely excluded. Chronic appendicitis is not a commonly encountered disease, if we exclude "financial appendicitis." Uncomplicated cases of acute appendicitis should be operated upon with a minimum of delay, although prompt surgical intervention does not imply that adequate time should not be spent in the administration of suitable fluids to correct dehydration and improve the patient's preoperative condition.

A muscle-splitting incision, such as the one originally advocated by Lewis Linn McArthur, should be the incision of choice when the diagnosis has been made. The routine use of an incision wherein muscles are recklessly incised and fascial planes are widely opened must be severely condemned, since the infection commonly present in neglected cases of acute appendicitis frequently results in extensive wound herniations or eviscerations.

Drainage of the peritoneal cavity is now usually employed only where a walled-off abscess or a sharply localized peritonitis exists. Today, more and more surgeons are *not* draining cases of generalized peritonitis resulting from appendicitis, but are being more conservative and are saving more lives by closing the peritoneum without drainage. They then institute, postoperatively, the original principles of Ochsner,[11] allowing nature to wall off the peritonitis in the pelvis. There the resulting abscess can be easily and safely drained from the cul-de-sac of the pouch of Douglas through either the anterior wall of the rectum or the fornices of the vaginal vault. Where the surgeon is addicted to draining a generalized peritonitis, the patient should be placed prone in bed so that his abdomen is next to the mattress, and the positive suction apparatus, so successfully employed by Rafe Chaffin of Los Angeles,[4] should be used.

LIGATION OF APPENDICAL STUMP

The argument of whether or not to invert the appendical stump still has its distinguished proponents on either side. However, the studies of my beloved former chief, Harold E. Robertson, indicating that inversion of the stump of the appendix vermiformis is not a clean surgical procedure, are steadily being more widely accepted by American surgeons. Inversion deliberately invites the formation of an abscess at the site of the appendectomy, which may later result in a fatality. No one is skillful enough to pass a needle and attached suture through the thin muscularis of the cecum, and preserve its sterility. The argument that a simple ligation of the appendical stump may subsequently permit the ligature to slip off the stump is not valid, if elementary care is exercised in using an absorbable catgut ligature and tying a proper surgical knot.

Noninversion of the appendical stump is the only sound pathologic and bacteriologic operative procedure. E. E. Larson[10] personally reported to the author several instances of fatal intestinal hemorrhage when the appendical stump was inverted without a preliminary precautionary ligation being performed.

DEVELOPMENTS IN SURGICAL TRAINING

Certain noteworthy developments during the past decade indicate a further diminishing of mortality rates. The certification of hospitals by the American College of Surgeons, as meeting the requirements for the safe and correct performance of surgery and for adequate training of future generations of surgeons, is of major importance and augers well for the future. The splendid program of post-graduate training for the young surgeon instituted by the International College of Surgeons is a further important step in this direction. The formulation of criteria for the correct training of a surgeon beyond his hospital intern years, as exemplified by the requirement of two or more post-graduate years championed by the American Medical Association, will prove of inestimable value in the increased saving of human lives. The certification of surgeons by the American Board of Surgery is a further step toward the ideal of developing in this country a group of highly proficient surgeons, in whom the public can safely place their entire confidence.

RECENT ADVANCES IN TREATMENT

The presentation of the concept of intestinal decompression by Wangensteen and his co-workers, and its further perfection through the introduction of the Miller-Abbott tube, supplanting the usually dangerous procedure of surgical drainage by enterostomy, has been of major importance in the successful care of neglected cases of acute perforated appendicitis. Numerous instances of this pathologic entity formerly considered hopelessly fatal are now being saved by prompt, properly applied intestinal decompression.

An appreciation of the vital importance of prompt identification of the chief bacteriologic organisms causing peritonitis, and the resultant institution of specific antibacteriologic therapy, have likewise caused an appreciable lowering of the mortality rate. The recent introduction of the sulfonamide group of drugs, especially sulfathiazole, is the latest major improvement. In a comparatively short period of time the specific bacteriostatic properties of this group have proved of tremendous, even spectacular, life-saving value. There is also a growing realization among surgeons of the great importance of an adequate intake of vitamins A, C, and the B-complex, which aid in smooth convalescence and increase the patient's resistance to infections.

There was formerly much confusion among surgeons as to the role played by the Ochsner[11] method of treatment. Fortunately, today, most of this misunderstanding has disappeared. The salient points of treatment originally presented by Ochsner for treatment of neglected acute perforated appendicitis were thoroughly sound, and still remain axiomatic when intelligently *applied by a skilled surgeon. Today*, however, we speak of the "deferred-operation" instead of "Ochsnerizing" a patient.

Surgeons are essentially agreed that deferment is indicated in instances where the clinical evidence, increased resistance of the patient to the infection, clearly indicates that the peritonitis is becoming localized. A deferment of surgical intervention for ten or more days has been proved to have saved many lives in cases of this type of appendicitis. However, if the patient is unable successfully to fight the peritonitis, a quick, simple appendectomy through a muscle-splitting incision, with adequate peritoneal aspiration, introduction of specific chemotherapy and anaerobic antitoxins into the peritoneal cavity, tight closure of the peritoneum, drainage of the incision from the peritoneum outward, loose re-approximation of the muscle layers only, intelligent application of a true marked Fowler's position and correct use of Ochsner's method of treatment will save many more lives than will unintelligent procrastination.

Obviously moribund patients should not be operated upon unless, for the purpose of thorough and complete peritoneal drainage, one uses the radical, long midline incision extending from the symphysis pubis to the ensiform cartilage (reported successfully employed by James F. Percy of Los Angeles[12] as a desperate "last-ditch" procedure). The more general use of blood, particularly plasma transfusions, has undoubtedly saved many lives that would previously have been lost.

In the case of the infant or the young child, surgeons now believe that aside from the difficulty of obtaining a correct detailed history of symptoms and accurately evaluating the available physical signs, the treatment of neglected instances of acute appendicitis is essentially the same as that now generally accepted for the adult. The one important difference between the child and the adult is that the inflammatory process proceeds approximately twice as fast in the child; hence the vital importance of a prompt diagnosis followed by immediate operation.

In childhood the appendix vermiformis is larger in relation to the rest of the gastrointestinal tract than in the adult. The child's appendix may actually extend deep into the true pelvis, or well over into the opposite side of the peritoneal cavity. The greater omentum of the child is a smaller structure and situated higher, affording less absolute protection in instances of peritoneal contamination than the adult's. Much of our present crystallization of opinion in treating childhood appendicitis is directly attributable to the noteworthy contributions of William E. Ladd to this subject.

ANATOMIC POSITION OF APPENDIX

The relationship of the anatomic position of the appendix vermiformis to the severity of the existent appendicitis is now more generally agreed upon than formerly, thanks to the pioneer study of Harold Brunn,[3] who demonstrated that the diseased appendix vermiformis lying in the pelvis resulted in increased difficulty of diagnosis, increased morbidity and a higher mortality rate.

This report led the author[6] to investigate the most common anatomic position of the diseased appendix vermiformis. It was found, after a detailed clinico-pathologic study,[8] that the retrocecally situated specimen was by far the most dangerous and atypical type of acute appendicitis commonly encountered. Today, more and more surgeons are accepting this view, which at first was vigorously denied by some.

The recent series of studies by Wangensteen and his co-workers[13, 14] on the mechanism of the causation of acute appendicitis and upon the mechanics involved in acute obstructive appendicitis have been highly important in clarifying the pathologic processes involved.

SUMMARY

Various advances during the past decade in the management of acute perforated appendicitis are discussed by the author. He stresses the importance of experienced surgical care in reducing the mortality rate from this disease, which even now claims 20,000 lives a year in this country.

In addition to an experienced operator, the author recommends the muscle-splitting incision, nondrainage of generalized peritonitis, specific antibacteriological therapy, proper vitamin intake in convalescence, deferred operation where peritonitis is becoming localized and noninversion of the appendical stump.

REFERENCES

1. Bower, John O Acute Appendicitis. A Survey of Its Incidence and Care in Philadelphia, J A.M A 96 1461 1465 (May 2), 1931
2 Bower, John O The Mortality of Acute Appendicitis. A Report of the Progress Made in a Campaign for its Reduction in Philadelphia, J A.M A. *99* 1765-1768 (Nov 19), 1932
3 Brunn, Harold Acute Pelvic Appendicitis, Surg , Gynec & Obst 63 583 592 (Nov), 1936.
4 Chaffin, Rafe C Personal communication to the author.
5. Collins, Donald C Historic Phases of Appendicitis, Ann. Surg 94 179-196 (Aug), 1931.
6 Collins, Donald C The Length and Position of the Vermiform Appendix A Study of 4,680 Specimens, Ann Surg. 96·1044-1048 (Dec), 1932.
7. Collins, Donald C.: Treatment of Appendicitis Am Surg. (new series) 37 440-445 (Sept), 1937
8 Collins, Donald C · Acute Retrocecal Appendicitis Based on 751 Instances, Arch. Surg. 36·729-743 (May), 1938
9 Collins, Donald C The Treatment of Complicated Acute Appendicitis, with Particular Reference to the Ochsner Method, Med Rec 150.127-129 (Aug 16), 1939
10. Larson, E Eric Personal communication to the author
11 Ochsner, A. J.. Appendicitis (summary), J Michigan M Soc. *3:371-378,* 1904
12 Percy, James F Personal communication to the author
13 Wangensteen Owen H , and Bowers, Warner F · Significance of the Obstructive Factor in the Genesis of Acute Appendicitis, Arch Surg 34:496-526, 1937.
14 Wangensteen, O H , Buirge, R E , Dennis, C , and Ritchie. W P · Studies on the Etiology of Acute Appendicitis Significance of the Structure and Function of the Vermiform Appendix in the Genesis of Appendicitis, Ann. Surg 106.910-942, 1937.

RÉSUMÉ

Présents aspects du problème de l'appendicite

Des differents progrès faits pendant la décade passée dans le traitement de l'appendicite aiguë perforée sont discutés par l'auteur. Il affirme l'importance de la cure chirurgicale expérimentée pour réduire la mortalité de cette maladie qui encore réclame 20.000 vies chaque année dans ce pays. En addition à un expérimenté opérateur, l'auteur recommande une incision qui divise les muscles, pas de drainage de la péritonite généralisée, specifique thérapie antibactérielle, propre quantité de vitamines dans la convalescence, différée opération quand la péritonite va se localisant et pas d'inversion du troncon de l'appendice.

ZUSAMMENFASSUNG

Gegenwärtige Ansichten uber das Appendicitis Problem

Es werden verschiedene Fortschritte der letzten zehn Jahre in Bezug auf die Behandlung akuter, perforierter Appendicitis, vom Autor besprochen. Er betont die Wichtigkeit von erfahrener chirurgischer Behandlung zur Herabsetzung der Sterblichkeitsziffer dieser Erkrankung, welche selbst heute noch dieses Land jährlich 20,000 Leben kostet. Ausser dem erfahrenen Operateur empfiehlt der Autor eine Muskel spaltende Incision, keine Drainage von generalisierter Peritonitis, spezifische antibakteriologische Therapie, richtige Vitaminzufuhr in der Rekonvaleszenz, Aufschub

der Operation wenn die Peritonitis sich lokalisiert und keine Inversion des Appendixstumpfes.

SUMARIO

Aspectos actuales del problema de la apendicitis

Discute el autor varios adelantos de la última década, al tratar de la apendicitis aguda perforada. Hace hincapié en la importancia de la atención quirúrgica para disminuir la proporción de la mortalidad debida a esta enfermedad, que aún hoy siega 20,000 vidas al año en este país.

Además de un cirujano experimentado, recomienda el autor que la incisión corte el músculo; que no se canalice la peritonitis generalizada; terapéutica antibacteriológica especifica; suficiente ingestión de vitaminas durante la convalecencia, retrasar la operación cuando la peritonitis se va localizando y la no inversión del pedículo apendicular.

RIASSUNTO

Aspetti presenti del problema dell'appendicite

Vari progressi fatti durante la decade passata nel trattamento dell'appendicite acuta perforata sono discussi dall'autore. Egli afferma l'importanza della cura chirurgica esperta nel ridurre la mortalità di questa malattia che ancora richiede 20.000 vite all'anno in questo paese. In aggiunta a un esperto operatore, l'A. raccomanda un'incisione che divida i muscoli, non drenaggio della peritonite generalizzata, specifica terapia antibatterica, appropriata amministrazione di vitamine nella convalescenza, ritardata operazione quando la peritonite sta localizzandosi e non inversione del moncone dell'appendice.

Carcinoma of the Thyroid

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THERE has been an increasing interest in carcinoma of the thyroid gland during the past few years. This is due, probably, to the apparent increase in the incidence of the disease.

Until recently a great deal of mystery surrounded tumors of the thyroid gland. It was thought that carcinoma of the thyroid was an exceptional disease and that it did not follow the general laws of tumor behavior. Even in the past decade it was thought that benign tumors of the thyroid were capable of metastasizing. However, progress in the treatment of malignant tumors of the thyroid has kept pace with the development of thyroid surgery in general.

The apparent increase in thyroid carcinoma is no doubt due to the fact that more nodular and hyperplastic goiters are now being removed, and that pathologic studies of the removed glands have become more intensive. We have come to realize that an innocent-appearing, benign, solitary adenoma will sometimes contain an extremely malignant carcinoma within its capsule.

The curability of cancer of the thyroid has likewise been demonstrated. We realize that cancer of the thyroid, as well as cancer in other parts of the body, has an early stage, and that its curability depends upon the alertness of the diagnostician and the pathologist and the thoroughness of the surgeon in removing these early growths.

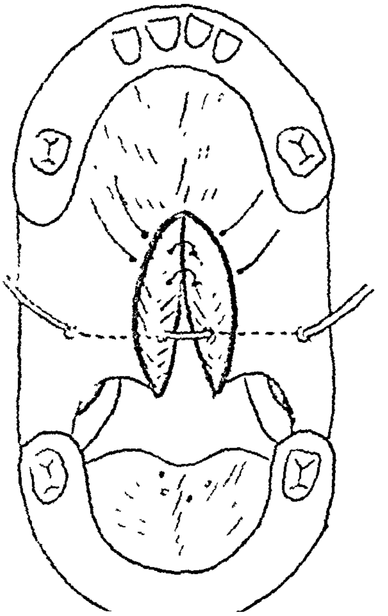
We here wish to review the subject briefly and to present a series of cases of carcinoma of the thyroid gland found in a general surgical practice extending over fifteen years, together with the results and the follow-up over that period.

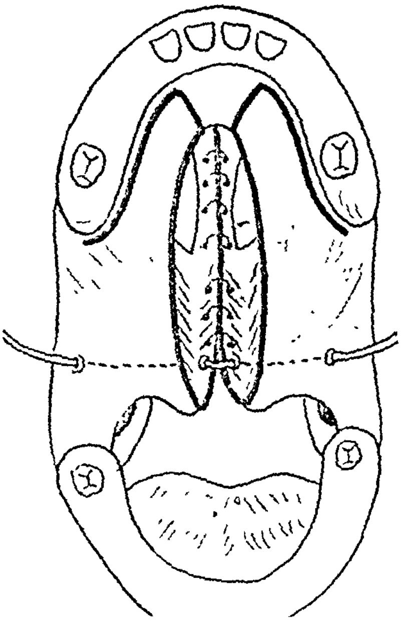
INCIDENCE

The reported incidence of malignancies of the thyroid gland varies with different clinics and individuals, according to their classification and criteria of malignancy. Most of their figures give the ratio of malignant to benign tumors. For this study the available statistics published by the United States Bureau of Public Health[1] were reviewed; also the ratio of carcinoma of the thyroid gland to cancer in all sites as reported from several large cities throughout the country.

It was found that in 1937 in Cook County (Chicago), out of 14,119 cases of cancer in all sites, 53 cases were cancer of the thyroid gland. In the same year 2,824 cases of cancer in all sites were reported in New Orleans; of these 11 were carcinoma of the thyroid gland. From Pittsburgh and the surrounding county 5,687 cases of carcinoma in all sites, with 37 cases in the thyroid gland, were reported. In 1938 in Dallas and the surrounding county there were 1,588 cases of carcinoma in all sites; 14 of these were carcinoma of the thyroid gland. More accurate statistics are, and probably always will be, obtainable from the larger clinics specializing in goiter treatment.

Berard[2] states that in goiter areas 2.5 to 4 per cent of all malignant tumors affect the thyroid gland, whereas in goiter-free areas the percentage is only .4 to .5 per cent of all malignancies. Wegelin[3] states that where goiter is endemic, malignant tumors of the thyroid occur in greater numbers. Dunhill[4] reports 38 cases occurring in 2,127 operations for all types of goiter, a percentage of 1.78. Shallow, Lemmon and Saledby re-





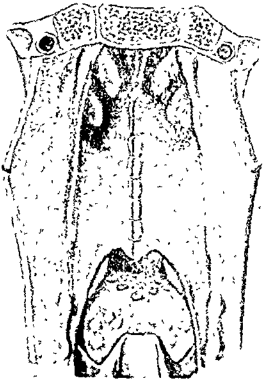


Fig 7. View of the nasal mucous membrane which has been sutured separately and a primary junction formed, following the technic of Veau, as seen from above the nasopharynx.

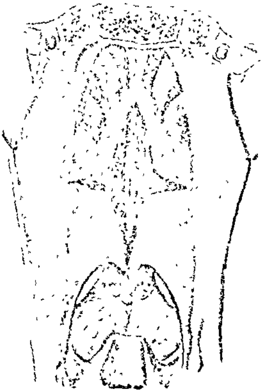


Fig 8. View of the nasal mucous membrane with large wounded surface which will be filled in by scar tissue due to the suturing of only the oral mucous membrane in the von Langenbeck classic operation, as seen from above the nasopharynx.

should the operation be performed before this time, the ultimate results would be *speculative. Until the fifth year of life tissues* are not sufficiently developed to withstand the necessary rough cuts and underminings. Unexpected by-injuries may occur in a younger child, and the success of the entire operation may become doubtful.

However, since such an operation can take place only when this tissue is adequately developed, normal speech will be difficult to achieve, in spite of the fact that the advocates of the von Langenbeck technic have modified the method with the intention of getting good speech results. Unsatisfactory speech usually results because, prior to the fifth year of life, the patient has already nasalized three years or more. He has developed a language with many anomalous sounds. After the operation he has to undergo a difficult speech education —an effort requiring great perseverance on the part of the patient, his associates, the operator and the speech instructor. At times this education has to be continued for many years, and even then the results obtained in the majority of cases are not satisfactory. The parents and relatives of the patient judge the success of the operation only by the speech results, and since they are usually disappointed, they consider the whole procedure a failure.

EARLY SURGERY

Brown, Davis[1] and Veau[7] operate in early childhood in order to avoid these complications relating to speech. They are of the opinion that the operation should be performed and the cleft palate closed before the patient learns to speak. The closing of the palate should be so complete that the patient is able to develop normal speech. The osteouranoplasty suggested by Brown and Davis has one disadvantage in that it is a rather rough procedure for this early age and does not take into consideration the *formation of scar tissue which usually follows.* The contraction of this tissue may be detrimental in the development of the alveolar arch and teeth, as shown in Figure 4.

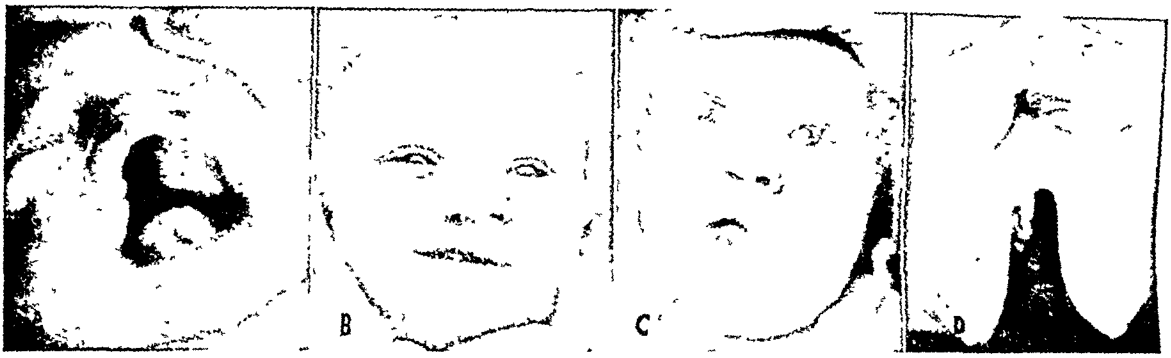


Fig. 9. One of the author's cases of unilateral lip-jaw-palate split, in which the cleft of the lip, the jaw and the hard palate were closed simultaneously in one stage of operation at three months of age *A*. Before the operation. *B*. Four weeks after the operation *C* Appearance of the lip and nose two years after the operation. *D*. Condition of the hard palate after the first stage of the operation, shown by a plaster impression. The cleft which remained was closed by the second stage of the operation which was performed nine months later.

With the operative technic of Veau, performed at the end of the first year, all these objections are avoided as far as possible. We have found this technic most successful (Figs. 9 and 10).

SPEECH RESULTS

A report of the original series of 50 cases treated by the above method was published by the author in 1935.[9] At the present time the number has increased to 196, indicating that the anatomic and speech results are most satisfactory.

Among these 196 patients were 96 in whom the palate was restored in the first year of life and who were examined later when speech had fully developed. The results were most gratifying in that all except 6 had developed normal speech without the slightest evidence of any defect. In these 6 the uvula had opened, necessitating a second operation.

We were able to re-examine 50 patients who underwent the operation at the end of the second year of life. Here the speech results were not as satisfactory, since only 40 children spoke normally, while the other 10 nasalized, in spite of the fact that the anatomical closure was perfect. It would seem, therefore, that satisfactory speech results decrease as the age at which the operation is performed increases.

These speech results approximate those published by Veau, who stated that 75 per cent of his 500 patients operated upon under the age of one year and 70 per cent operated upon under the age of two years were speaking normally. It is evident, therefore, that if the cleft palate is closed at about the end of the first year of life, the child will grow up speaking normally, without the necessity of speech education and its uncertain results. The tenderness of the tissue is no contraindication, since the cases of Veau, as well as those reported in this paper, prove that the anatomical closure of the palate can be obtained in at least 85 per cent.

The main criticism made of the operation in early childhood is that the operative mortality might be too great. However, in Veau's group of children *operated upon before the end of the first year of life*, there was a mortality of only 1.4 per cent.

Among our 196 cases there have been only 2 fatalities, and these deaths were not caused by the operation. One case was a premature baby with congenital lues, the operation being performed only at the insistence of the parents. The second patient died from the rare condition of anthrax of the lungs. Until admission to the hospital, this patient had been fed with the milk from a cow suffering from anthrax.

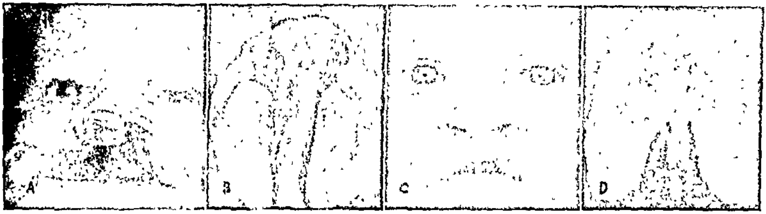


Fig. 10. One of the author's cases of bilateral lip-jaw-palate split in which the clefts of the lip, the jaw and the hard palate were closed simultaneously in one stage of operation at the age of three months. *A* Before the operation. *B*. Condition of the palate before the operation, shown by a plaster impression *C*. Four weeks after the operation. *D* Condition of the alveolar arch and the hard palate after the first stage of the operation, shown by a plaster impression The soft palate cleft which remained was closed by a second stage of the operation performed nine months later

Among the 196 cases reported were patients suffering from lip-jaw-palate split. In these cases the lip must be operated on in the first month of life, whether or not one uses the operative method of Veau.

SUMMARY

The author recommends the end of the first year of life, or when the infant first begins to speak, as the most favorable age for a cleft palate operation. This is based not only on the anatomical results obtained, but on the normal development of speech in 196 cases operated upon at this age by the author. Veau's technic was found most adaptable for treatment at this early age.

The osteouranoplasty of Brown and Davis may also be used, but this operation is somewhat severe and may interfere with the development of jaw and teeth.

If the age of two years is missed, it is better to delay operation until the fifth year. At this age the operation of von Langenbeck, Dorrance, Ernst and Halle, and others may be used. It must be noted, however, that the speech results are not always satisfactory.

REFERENCES

1 Von Langenbeck· Neitere Erfahrungen im Gebiete der Uranoplasty mittels Ablosung des mucoperiostalen Gaumenuberzuges, Berlin, 1863; Arch f Klin Chir. 5 1, 1864

2. Dorrance, G M. The Operative Story of Cleft Palate, Philadelphia, W. B Saunders Company, 1933, p 397.

3. Ernst. Kirschmann Nordmann Chirurgy, vol 4, p 682

4 Davis, Warren B Harelip and Cleft Palate, Ann Surg, *87·536, 1928*

5 Veau, V. Division Palatine, Anat. Chir Phonetique, Paris, Merson Co, 1931

6 Halle, Max Chir. und Phonetische Erfolge der Spatoperation von Gaumendefecten, Klin. Wchnschr 7·2369, 1928

7 Davis, Warren B Harelip and Cleft Palate, Ann. Surg *87·536, 1928.*

8 Axhausen, Georg. Technik und Ergebnisse der Gaumenplastic, 1936

9 Spanier, Fritz: Bericht uber 50 Falle nach Veau operierter Gaumenspalten mit kritischer Betrachtung, Deutsche Zahn-Mund und Kiefer Heilkunde, vol 2, no 4, 1935

RÉSUMÉ

Le meilleur âge pour l'opération des fentes du palais

L'auteur recommande la fin de la première année de vie comme l'âge le plus favorable pour opérer les fentes du palais, ou bien quand l'enfant commence à parler; ça a sa raison non seulement dans des résultats anatomiques obtenus, mais aussi sur le normal développement de la parole dans 196 cas opérés à cet âge par l'auteur. La technique de Veau a été trouvée la plus adaptable pour le traitment à cet âge.

La ostéouranoplastique de Brown et Davis peut être aussi employée, mais cette opération est un peu serieuse et elle peut déranger le développement de la mandibule et des dents.

Si on manque l'âge de deux ans, il est mieux de différer l'opération aux cinq ans. A cet âge l'opération de Langenbeck, Dorrance, Ernst et Halle peut être employée. On doit remarquer pourtant que les résultats de la parole ne sont pas toujours satisfaisants.

ZUSAMMENFASSUNG

Das beste Alter zur Operation des Spaltgaumen

Der Autor empfiehlt das Ende des ersten Lebensjahres, oder den Zeitpunkt in welchem das Kind zu sprechen beginnt, als das best geeignete Alter zur Operation des Spaltgaumen. Diese Ansicht ist nicht nur auf Grundlage der anatomischen Erfolge aufgebaut, sondern auch auf der normalen Entwicklung der Sprache von 196 Fällen, welche in diesem Alter vom Autor operiert wurden. Die Technik von Veau erwies sich als die geeignetste für dieses frühe Alter.

Die Osteo-Uranoplastik von Brown und Davis kann auch verwendet werden, doch ist diese Operation eine eher schwere und kann die Entwicklung von Kiefer und Zähnen beeinträchtigen.

Wenn das Alter von zwei Jahren versäumt wurde, so ist es besser mit der Operation bis zum fünften Lebensjahr zu warten. In diesem Alter kann die Operation nach von Langenbeck, Dorrance, Ernst und Halle und anderen verwendet werden. Es sei jedoch festgestellt, dass die Spracherfolge nicht immer befriedigend sind.

SUMARIO

La edad óptima para la operación de la hendidura palatina

El autor recomienda el final del primer año de la vida, o cuando el niño empieza a hablar, como la más favorable edad para la operación de la hendidura palatina. Esto está basado no solamente en los resultados anatómicos obtenidos, sino también en el desarrollo normal del habla, en 196 casos operados en esta edad, por el autor. Se halló que la técnica de Veau es la más adaptable para el tratamiento en esta temprana edad.

La osteo-uranoplastía de Brown y Davis puede también utilizarse, pero esta operación es algo severa y puede modificar el desarrollo del maxilar y los dientes.

Si se dejan pasar los primeros dos años de edad, es mejor demorar la operación hasta los cinco años de edad. A esta edad las operaciónes de von Langenbeck, Dorrance, Ernst y Halle y otros, pueden practicarse. Debe anotarse, sin embargo, que los resultados en cuanto al habla no siempre son satisfactorios.

RIASSUNTO

L'età migliore per l'operazione delle fessure del palato

L'A. raccomanda la fine del primo anno di vita come la più favorevole età per operare le fessure del palato, oppure quando il bambino comincia a parlare. Ciò si basa non solo su risultati anatomici ottenuti ma sul normale sviluppo della parola in 196 casi operati a questa età dall'A. La tecnica di Veau fu trovata la più adatta per il trattamento a quest'età. La osteourano-plastica di Brown e Davis può anche essere usata, ma questa operazione è un po'seria e può interferire con lo sviluppo della mandibola e dei denti.

Se si oltrepassa l'età dei due anni, è meglio posporre l'operazione ai 5 anni. A quest'a età l'operazione di Langenbeck, Dorrance, Ernst e Halle può essere usata. Deve essere notato, però, che i risultati della parola non sono sempre soddisfacenti.

Operative Treatment of Buerger's Disease

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DURING the last sixteen months I have had the opportunity of operating upon 14 cases of Buerger's disease, using various operative methods. Although it is still naturally impossible to judge of the permanent effects, in some of the cases the result of the operation was quite unsatisfactory; it is, therefore, the purpose of this paper to demonstrate that in some cases of Buerger's disease even several operations, immediately following each other, may fail to produce results.

It is striking that in the papers of other authors dealing with this subject so evident a failure of the modern operative methods has not been pointed out.

Since both myself and my colleague, Dr. E. G. Joseph, had little opportunity of seeing cases of this type in our former European practice, it is highly probable that climatic as well as nervous and social factors may be active in producing this particular type of reaction among the variegated population of this country.

Before reporting the case histories, the following points must be made clear:

1. The classical *description* of thromboangiitis obliterans was given by Leo Buerger in 1903. Buerger showed that in this condition smaller as well as larger arteries and veins are pathologically changed, these changes being inflammatory in nature. The vessels of certain areas become subject to these changes either altogether or in patches, so that eventually the vessels become obstructed by thrombi. When this stage is reached, it is difficult to differentiate the thrombotic condition from other obstructive vasculatory diseases. It is, however, not only the vessels of the extremities that are affected, the blood vessels of all internal organs may also become subject to these changes (Hausner and Allen).

2. As to the *diagnosis*, there could be no doubt—according to the views generally held at present—that my cases definitely belonged to Buerger's group. The symptoms and course of the disease, the fact that young males were mainly affected (juvenile gangrene) did not permit of any doubt. Oscillometry and electrical thermometry (apart from clinical symptoms the decisive factors in the diagnosis of this condition) were applied in all our cases and definitely pointed toward this particular disturbance. To establish diagnosis arteriography is, in my opinion, unnecessary.

3. The *pathogenesis* of this disease is unclarified as yet. The literature is not very helpful, nor am I able to contribute to the solution of the problem. Buerger, as is well known, succeeded in transferring the disease from humans to animals by means of the pathologically changed tissue of the arteries and veins. In 1933 Maggi and Mazzochi showed that several implantations of suprarenal gland actually produced a condition very similar to Buerger's disease in animals. However, no very far-reaching deductions can be drawn from these facts.

The only impressive fact in the majority of my cases was that, to begin with, there was some inflammatory process of the legs, mainly acute or chronic thrombophlebitis, differing in degree. In other cases—post hoc or propter hoc—the earliest symptoms were suppuration of the nail bed (paronychia), preponderantly on the big toe, or eczema interdigitalis.

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In all our patients, various metabolic examinations were repeatedly made: blood pressure, chemical blood tests, urine analyses, circulatory speed, blood volume. None of these methods, however, gave any indication as to the pathogenesis of the disturbance or as to which operative method would be advisable in the individual case.

4. We know that *medicinal therapy* is of great importance in Buerger's disease, in particular, physiotherapy, heat, alternating hot and cold baths, iontophoresis, short waves, venous hyperemia, suction and pressure therapy (cf. de Takacz), oscillating bed (Sanders); in addition, the vast number of spasmolytic drugs producing dilation of smaller and larger blood vessels. Silbert achieved particularly satisfactory results with intravenous injections of a 5 per cent sodium chloride solution; these proved highly beneficial in 83 per cent of his cases, provided a certain technic was adhered to.

It is impossible to go into detail as to all these methods. I only want to emphasize the fact that not one of our patients was operated upon before extensive internal therapy had been tried for a considerable length of time. In all our cases it proved to be a failure (see Case 9, who received as many as 5,600 injections of all kinds).

In those cases in which operation was performed at an earlier stage than might have seemed advisable, this was done because of (a) unbearable pain; (b) the occurrence of gangrene with septic symptoms.

5. The *clinical symptoms* of this disease present a pathologic-anatomic unity. Clinically, three definite groups have to be considered. This classification is also of importance in a prognostic as well as a therapeutic respect.

a. In the first group pain is the main factor and remains so during the course of the disease. This I term stage I. No inflammatory or gangrenous symptoms are present, although oscillometry as well as thermometry yield characteristic results. It may well be that only vascular spasms are active in producing the trouble in cases of this type.

b. Inflammation or ulcers which show a tendency to heal badly or not at all are the main feature in this group of cases (stage II). This may be due to slight obliteration of smaller vessels.

c. Gangrene, predominantly the moist kind, is the main symptom in stage III (stage of vascular occlusion).

As long as the statistics on operative results and on medicinal therapy reported by various authors are not based on this classification, it is very difficult to gauge the practicability of the various methods. It is, however, not only this factor that makes prognosis as well as therapy a matter of the utmost uncertainty. There is in addition the speed with which stage I may merge into stage II, or the length of time during which the case remains in the first or the second stage.

It is, indeed, surprising how long some patients suffer only from severe pain without any ulcer or gangrene occurring. In other cases there is a speedy transition from stage I to stage II or III. However, in my opinion, therapy has no bearing whatsoever on this occurrence (e.g., Cases 11 and 13).

6. As to the various *operative methods* which I have used, the following may be said:

a. *Arteriography* with various kinds of oily iodine solutions—although this is in contradiction to views of other authors—is a definite failure. In no case did I see improvement from this procedure.

b. In some cases which presented mainly inflammatory symptoms (stage II), I tried *intra-arterial injection* of dye solutions (mercurochrome, gentian-violet). This I did because of the possibility that there might be inflammation of small blood vessels which would respond favorably to this